Technical Support Document
for
Draft Air Emission Permit No. 11100036-101

This technical support document (TSD) is intended for all parties interested in the draft permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft permit.

1. General information

1.1 Applicant and stationary source location

Table 1. Applicant and source address

Applicant/Address	**Stationary source/Address** (SIC Code: 4953 - Refuse Systems)
Prairie Lakes Municipal Solid Waste Authority 1115 N Tower Rd Fergus Falls, MN 56537-1053	Perham Resource Recovery Facility 201 6th Ave NE Perham, MN 56573-2331
Contact: Brian Schmidt Phone: 218-346-4404 1	

1.2 Facility description

Perham Resource Recovery Facility (PRRF or Facility) is a waste combustor facility that includes two waste combustion units that can operate individually. Each unit can process up to 100 tons of waste per day with a heat input rate of 45.8 MMBtu/hr.

The waste combustors generate steam which is sold locally. Each waste combustor has a primary and secondary combustion chamber, heat recovery boiler and economizer, and air pollution control equipment. Pollution control equipment consists of dry lime injection for the control of acid gases, activated carbon injection for the control of mercury and dioxin/furans, and fabric filters for the control of particulate matters (PM, PM_{10}, and $PM_{2.5}$) and other metals.

Exhaust combustion gases from each waste combustor are continuously monitored for carbon monoxide (CO), sulfur dioxide (SO_2), oxygen (O_2), and opacity. Operating parameters, including fabric filter inlet temperature, steam flow rate, and activated carbon feed rate parameters are also monitored continuously for each waste combustor unit.

Performance testing is conducted for each waste combustion unit. Exhaust gases from both units are ultimately combined and exhausted to the atmosphere through a combined stack. Each waste combustion unit is also equipped with a dump stack for use in the event of an emergency.

PRRF also includes an 83.5 MMBtu/hr natural gas auxiliary boiler with low NO_X burners and flue gas recirculation for NO_X control, and a materials recovery facility (MRF) where all incoming waste is sorted and undesired wastes for combustion and recyclables are removed prior to combustion.

Ash produced during waste combustion is loaded in an enclosed area, covered, and transported via trucks to the Northeast Ottertail Ash Landfill.

1.3 Description of the activities allowed by this permit action

This permit action is Part 70 Reissuance and includes an administrative amendment, and three permit reopening actions to incorporate revised operating limits based on performance test results as provided in notices of compliance. No construction is associated with this permit action.

1.4 Description of notifications and applications included in this action

The administrative amendment included in this action is to incorporate 40 CFR pt. 63, subp. DDDDD applicable requirements for the auxiliary boiler, EQUI 33.

Table 2. Notifications and applications included in this action

Date received	Application/Notification type and description
07/11/2013	Administrative Amendment (IND20130001)
09/22/2017	Part 70 Reissuance (IND20170001), supplemental information received 03/23/2026

1.5 Facility emissions

Table 3. Total facility potential to emit summary (including fugitives)

	PM (tpy)	**PM_{10}** (tpy)	**$PM_{2.5}$** (tpy)	**SO_2** (tpy)	**NO_x** (tpy)	**CO** (tpy)	**CO_2e** (tpy)	**VOC** (tpy)	**Single HAP**** (tpy)	**All HAPs** (tpy)
Total facility limited potential emissions	19.4	6.64	6.60	51.4	115	64.4	124,952	5.62	75.3	76.6
Total facility actual emissions (2024)	4.75	4.75	4.01	10.5	58.8	6.49	*	0.59	*	

*Not reported in Minnesota emission inventory.
**Hydrogen Chloride

Table 4. Facility classification

Classification	Major	Synthetic minor/area	Minor/Area
New Source Review	X		
Part 70	X		
Part 63	X		

1.6 Changes to permit

The permit does not authorize any specific modifications, however, the MPCA has a combined operating and construction permitting program under Minnesota Rules Chapter 7007, and under Minn. R. 7007.0800, the MPCA has authority to include additional requirements in an operating permit. The following changes to the permit are made through this permit action:

- The permit has been updated to reflect current MPCA templates and standard citation formatting;
- Completed requirements and the requirements for equipment that has been removed have been deleted;
- Subject item details have been updated;
- Some requirements have been reordered or moved to help with clarity (i.e., similar requirements are grouped);
    - Most requirements that apply to continuous emission monitors (CEMS) are moved to COMG 3. CEMS requirements that apply to the individual monitors are listed under the emission unit level (EQUIs 2, 3, 9, 10, 11, 14, and 31).

- Requirements for continuous opacity monitors (COMS) are moved to COMG 4 and requirements that apply to the individual monitors are added under the emissions unit level (EQUIs 1, 15, and 16).
- Waste combustor control equipment requirements that apply to each individual control are moved under the control equipment level (TREAs 1 - 6).

- Additional monitoring and recordkeeping requirements are added to the permit for activated carbon adsorption (TREAs 3 and 6), dry injection systems (TREAs 2 and 5), and for fabric filters (TREAs 1 and 4); and
- The insignificant activities for the facility have been updated to reflect the current activities on site as well as to reflect changes to these rules since the last permit was issued.

2. Regulatory and/or statutory basis

2.1 New source review (NSR)

The facility is an existing major source under New Source Review regulations. No modifications are authorized by this permit.

Title I conditions to monitor and record annual NO_X, PM_{10}, and $PM_{2.5}$ emissions for a period of 10 years after startup of EQUI 35 have been completed and are removed from the permit. PRRF installed NO_X CEMS to monitor NO_X emissions and had the option to conduct PM_{10} and/or $PM_{2.5}$ stack tests if the calculated PM_{10} and/or $PM_{2.5}$ emissions using the total PM (filterable and condensable) emission factor resulted in emissions above the major modification thresholds for the year. PRRF can use their NO_X CEMS for emissions inventory purposes for EQUI 35 as long as the PRRF complies with the requirements in the permit for the NO_X CEMS, EQUI 14.

2.2 Part 70 permit program

The facility is a major source under the Part 70 permit program.

2.3 New source performance standards (NSPS)

EQUI 33, auxiliary boiler is subject to 40 CFR pt. 60, subp. Dc, “Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.”

EQUI 35, waste combustor, is subject to 40 CFR pt. 60, subp. AAAA, "Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001".

EQUI 36 is not subject to 40 CFR pt. 60, subp. BBBB because the MPCA has not submitted a State plan to implement the emission guidelines. 40 CFR pt. 60, subp. BBBB, “Emissions Guidelines and Compliance Times for Small Municipal Waste Combustion Units Constructed on or Before August 30, 1999” requires administrators of air quality programs in a State or United States protectorates with one or more existing small municipal waste combustion units to submit a State plan to the U.S. Environmental Protection Agency (EPA) that implements the emission guidelines.

2.4 Approval and Promulgation of State Plans for Designated Facilities and Pollutants

40 CFR pt. 62, subp. JJJ, “Federal Plan Requirements for Small Municipal Waste Combustion Units Constructed on or Before August 30, 1999” establishes emission requirements and compliance schedules for the control of emissions from existing small municipal waste combustion units that are not covered by an EPA approved and effective State plan. Thus, EQUI 36 is subject to 40 CFR pt. 62, subp. JJJ.

2.5 National emission standards for hazardous air pollutants (NESHAP)

EQUI 33, auxiliary boiler is subject to 40 CFR pt. 63, subp. DDDDD, “National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process

Heaters". EQUI 33 is an existing affected source that burns natural gas and is in the units designed to burn gas 1 fuels subcategory.

2.6 Variances from Minnesota standards for Waste Combustors

EQUIs 35 and 36 are subject to Minn. R. 7011.1201 to 7011.1285. In 1997, the MPCA issued variances from parts of the waste combustor rules, Minn. R. 7011.1201 to 7011.1285 to several Class C waste combustors including EQUI 36 at PRRF. Once the MPCA submits a state plan to implement the emission guidelines of 40 CFR pt. 60, subp. BBBB, EQUI 36 will no longer be subject to 40 CFR pt. 62, subp. JJJ and all variances from Minn. R. 7011.1201 to 7011.1285 will no longer be valid. Even so, the 1997 variances issued to PRRF have been completed or no longer apply. The MPCA approved waste combustor rule variance is included as Appendix J to the permit.

The MPCA also issued a variance from Minn. R. 7035.2910 pertaining to ash testing requirements for municipal solid waste (MSW) combustors in 1996. Variances from ash testing requirements include individual analysis of quarterly ash samples and quarterly test frequency. The MPCA approved MSW combustor ash testing variance is included in the permit as Appendix I to the permit.

2.7 State Plans and Minnesota standards for Waste Combustors

Section 129 of the Clean Air Act (CAA) directs the EPA to develop regulations under CAA section 111(d) to limit nine air pollutant emissions: PM, CO, dioxins/furans, SO_2, NO_X, HCl, lead, mercury, and cadmium from municipal solid waste; hospital, medical and infectious solid waste; commercial and industrial solid waste; and other solid waste incineration units.

New source performance standards and Emission Guidelines (EG) for new and existing small municipal waste combustors fulfill the requirements of CAA sections 111 and 129. EG do not directly regulate solid waste combustion units but establish requirements for states to establish plans to implement the EG.

Federally enforceable rules are those rules listed in the SIP and 111(d) plans. The Minnesota standards for waste combustors listed under Minn. R. 7011.1201 to 7011.1285 are not included under the Minnesota SIP because these rules limit other pollutants in addition to criteria pollutants. Additionally, because there is no state plan for existing small municipal waste combustion units to include Minn. R. 7011.1201 to 7011.1285, these are state enforceable requirements for EQUI 36 and are not enforceable by the EPA.

EQUI 35 is subject to 40 CFR pt. 60, subp. AAAA. No EPA approval or state plan is needed for NSPS requirements. However, because Minn. R. 7011.1201 to 7011.1285 are not included under the Minnesota SIP or 111(d) plan, the rule is state enforceable only and not enforceable by the EPA.

Most of the Minn. R. 7011.1201 to 7011.1285 requirements are now listed separately from the federal rules for 40 CFR pt. 60, subp. AAAA and 40 CFR pt. 62, subp. JJJ in this permit. This is because if there is noncompliance with a requirement that is similar for both the Minnesota standard for waste combustor rule and a federal standard, EPA can only take enforcement on the federal rules and citations. Previously, state and federal requirements were listed in the permit including all the applicable citations to prevent redundancy and for simplicity since many of the state rules overlap with the federal rules.

2.8 Compliance assurance monitoring (CAM)

CAM is removed in this permit. Waste combustors EQUIs 35 and 36 controlled by fabric filters TREAs 4 and 1 respectively, are not subject to CAM because the only particulate matter limits that apply are for filterable and total PM, and PM does not have a Part 70 threshold.

2.9 Regulatory Overview

Table 5. Regulatory overview of facility

Subject item*	Applicable regulations	Rationale
TFAC - Air Quality Total Facility	Minn. R. 7007.0801	Conditions for Air Emission Permits for Waste Combustors
	Minn. R. 7035.2910	Municipal Waste Combustor Ash Testing Requirements**
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	Title I Condition: 40 CFR 52.21(k)(modeling) & Minn. R. 7007.3000	Ambient Air Quality Standards. Remodeling requirements and stack parameters used during modeling are included in the permit. National Ambient Air Quality Standards (NAAQS) modeling for criteria pollutants including SO_2, CO, PM_{10}, and $PM_{2.5}$, NO_2, and lead (Pb) was conducted during permit action 11100036-004 as part of environmental review. Air Emissions Risk Analysis (AERA) modeling for air toxics was also conducted.
	Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)	
COMG 3 – Continuous Emission Monitors (CEMs)	40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1295	Federal plan requirements for small municipal waste combustion units constructed on or before August 30, 1999 This standard applies to the CEMs monitoring EQUI 36.
	40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1293	Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001 This standard applies to the CEMs monitoring EQUI 35.
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	40 CFR § 60.13, Minn. R. 7017.1010-1130	Monitoring and Testing Requirements for Continuous Monitoring Systems
	Minn. R. 7007.0800, subp. 4	Monitoring and Testing Requirements for EQUI 35 NO_X CEMs.
COMG 4 – Continuous Opacity Monitors	40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1295	Federal plan requirements for small municipal waste combustion units constructed on or before August 30, 1999 This standard applies to the COM monitoring EQUI 36.
	40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1293	Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001 This standard applies to the COM monitoring EQUI 35.
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	40 CFR § 60.13, Minn. R. 7017.1010-1130	Monitoring and Testing Requirements for Continuous Monitoring Systems
EQUI 33 - Auxiliary Boiler w/ FGR and low NOx burners	40 CFR pt. 60, subp. Dc, Minn. R. 7011.0570	NSPS for Small Industrial-Commercial-Institutional Steam Generating Units. Applicability criteria include: • unit commenced construction after June 9, 1989; • unit has a capacity greater than or equal to 10 MMBtu/hr and less than or equal to 100 MMBtu/hr; and • unit burns only natural gas.

Subject item*	Applicable regulations	Rationale
	40 CFR pt. 63, subp. DDDDD, Minn. R. 7011.7050	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters. Applicability criteria include: • the facility is a major source of HAP emissions; • the unit is existing; • the unit burns gas 1 fuel (natural gas); • the unit uses an oxygen trim system; and • the unit has a heat input capacity greater than or equal to 10 MMBtu/hr.
EQUI 35 – South MSW Incinerator	40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1293	Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
EQUI 36 – North MSW Incinerator	40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1295	Federal plan requirements for small municipal waste combustion units constructed on or before August 30, 1999
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
STRU 2 – South Unit Dump Stack	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
STRU 3 – North Unit Dump Stack		
STRU 5 – Combined MWC Stack	Minn. R. 7007.0800, subp. 2(A)	Limitation for stack height to ensure compliance with emission limits.
TREA 1 - Fabric Filter (EQUI 36)	40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1295	Federal plan requirements for small municipal waste combustion units constructed on or before August 30, 1999
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	Minn. R. 7007.0800, subp. 4-5	Monitoring and recordkeeping requirements based on the Minnesota Performance Standard for Control Equipment provides a reasonable assurance of compliance.
TREA 2 - Dry Limestone Injection (EQUI 36)	Minn. R. 7007.0800, subp. 4-5	Monitoring and recordkeeping requirements based on the Minnesota Performance Standard for Control Equipment provides a reasonable assurance of compliance.
TREA 3 - Activated Carbon Adsorption (EQUI 36)	40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1295	Federal plan requirements for small municipal waste combustion units constructed on or before August 30, 1999
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	Minn. R. 7007.0800, subp. 4-5	Monitoring and recordkeeping requirements based on the Minnesota Performance Standard for Control Equipment provides a reasonable assurance of compliance.
TREA 4 - Fabric Filter (EQUI 35)	40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1293	Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**

Subject item*	Applicable regulations	Rationale
	Minn. R. 7007.0800, subp. 4-5	Monitoring and recordkeeping requirements based on the Minnesota Performance Standard for Control Equipment provides a reasonable assurance of compliance.
TREA 5 - Dry Limestone Injection (EQUI 35)	Minn. R. 7007.0800, subp. 4-5	Monitoring and recordkeeping requirements based on the Minnesota Performance Standard for Control Equipment provides a reasonable assurance of compliance.
TREA 6 - Activated Carbon Adsorption (EQUI 35)	40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1293	Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	Minn. R. 7007.0800, subp. 4-5	Monitoring and recordkeeping requirements based on the Minnesota Performance Standard for Control Equipment provides a reasonable assurance of compliance.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

**The language 'This is a state-only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act' refers to permit requirements that are established only under state law and are not established under or required by the federal Clean Air Act. The language is to clarify the distinction between permit conditions that are required by federal law and those that are required only under state law. State law-only requirements are not enforceable by the EPA or by citizens under the federal Clean Air Act but are fully enforceable by the MPCA and citizens under provisions of state law.

3. Technical information

3.1 Calculations of potential to emit (PTE)

Attachment 1 to this TSD contains a summary of the PTE of the Facility as well as detailed spreadsheets and supporting information prepared by the MPCA and the Permittee.

Waste Combustors

The uncontrolled PTE estimates are based on AP-42, Compilation of Air Pollutant Emissions Factors, Section 2.1 emissions factors except for volatile organic compounds (VOC) which are based on AP-42, 4th Edition Supplement C, Sept 1990, Table 2.1-1 “Emission Factors for Municipal Waste Combustors” for uncontrolled and limited PTE, and carbon dioxide equivalent (CO_2e) which is based on emission factors and global warming potentials from 40 CFR pt. 98 for uncontrolled and limited PTE.

AP-42, Section 2.1 emissions factors for refuse derived fuel (RDF) are based on an F-factor of 9,570 dscf/MMBtu and a heating value of 5,500 Btu/lb. AP-42 emission factors are adjusted to calculate PTE using the heating value of 4,379 Btu/lb based on the heating content determined from the 2012 waste composition study.

PRRF is permitted and allowed to burn RDF, however the waste combusted at the Facility is not considered RDF. The waste is processed through their materials recovery facility (MRF) and is sorted to reduce the quantity of noncombustible material but does not include a method for creating a uniform waste size reduction.

PM, SO_2, NO_X, CO, lead (Pb), HCl, cadmium (Cd), mercury (Hg), and dioxin/furan (PCDD/PCDF) limited PTE are calculated based on applicable limits and AP-42 Table 2.1-11 conversion factors. PM_{10} and $PM_{2.5}$ limited PTE are calculated using controlled AP-42, Section 2.1 emissions factors.

The hourly tons per hour waste throughput is an average and is back calculated from the tons per day throughput. This back calculation for PTE purposes was determined to be acceptable as the more conservative RDF emission factors are used to estimate PTE and performance testing pounds per hour emissions have shown to be below the limited PTE rates.

Hazardous air pollutants (HAP) PTE are calculated using AP-42 emission factors for unlimited PTE and emission factors determined from Olmsted Waste-to-Energy Facility (OWEF) 2004 performance test results for both limited and unlimited PTE where AP-42 unlimited emission factors are not available for the respective HAP.

The 2004 OWEF HAP emission factors are the best available emission factors currently available. OWEF waste combustors have the same capacity as Perham's waste combustors. OWEF completed HAP performance testing as part of an air emissions risk analysis (AERA).

Auxiliary Boiler
All emission factors used to calculate PTE from the auxiliary boiler are from AP-42 Chapter 1.4 for natural gas. CO_2e PTE is calculated using emission factors and global warming potentials are provided in 40 CFR pt. 98, Tables C-1 and C-2.

Paved Roads
AP-42, Section 13.2.1, Equation 2, (1/11) and emission factors are used to calculate fugitive emissions from paved roads.

Lime Storage and Handling
PM PTE from these sources is calculated using emission factors from AP-42, Section 11.17, Table 11.17-4, for enclosed truck loading. This source of emissions qualifies as an insignificant activity.

Cooling Tower
PM PTE from the cooling tower is based on the calculation methodology from "Calculating Realistic PM_{10} Emissions from Cooling Towers", Environmental Progress, Vol. 21, No. 2. (July 2002). This source of emissions also qualifies as an insignificant activity.

3.2 Ambient air quality analysis

As required by Minnesota Environmental Impact Statement (EIS) rules, the Permittee completed air dispersion modeling to show modeled compliance with the PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, and lead national ambient air quality standard (NAAQS) and air toxics in support of permit action 11100036-004. This permit requires $PM_{2.5}$ remodeling in the future when certain changes are proposed, therefore a table of the $PM_{2.5}$ modeled parameters is included in permit Appendix B to document the values used in baseline modeling. NO_X modeling parameters are also included in Appendix B for reference. These parameters describe the operation of the facility at the worst-case emission rates at the time of the model.

The modeling requirements in permit 11100036-004 were cited as Title I conditions. The TSD for permit 11100036-004 supports that the modeling was not required under 40 CFR 52.21(k), but for NAAQS, Minnesota National Ambient Air Quality Standards (MAAQS), and air toxics. The citations for the modeling requirements in the permit are corrected to "Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)".

3.3 Performance testing history

Tables 6 and 7 show the performance tests for waste combustors, EQUIs 35 and 36, respectively for tests conducted since the previous reissuance of the Part 70 permit issued in 2013.

Table 6. Performance Tests for EQUI 35 South MSW Incinerator

Parameter	Limit	Units	Stack Test Start Date	Tested Result*	Status
Cadmium	0.02	milligrams/dscm	1/20/2015	0.0011	Compliant
			12/3/2015	0.0036	Compliant
			1/31/2017	0.267	Noncompliant
			4/4/2017	0.0038	Compliant
			5/14/2019	0.0077	Compliant
			5/11/2020	0.013	Compliant
			5/11/2021	0.005	Compliant
			5/14/2024	0.00066	Compliant
Dioxins/Furans	13	nanograms/dscm	1/20/2015	0.059	Compliant
			12/3/2015	0.36	Compliant
			1/31/2017	0.064	Compliant
			5/21/2018	0.107	Compliant
			5/11/2021	0	Compliant
			5/14/2024	0.0034	Compliant
HCl	25	parts per million	1/20/2015	10.08 (LFR 160 lb/hr)	
	95	% control efficiency	1/20/2015	98.09 (LFR 160 lb/hr)	Compliant
	25	parts per million	1/20/2015	17.69 (LFR 130 lb/hr)	
	95	% control efficiency	1/20/2015	96.74 (LFR 130 lb/hr)	Compliant
	25	parts per million	12/3/2015	77.93	
	95	% control efficiency	12/3/2015	91.62	Noncompliant
	25	parts per million	1/28/2016	8.43	
	95	% control efficiency	1/28/2016	98.2	Compliant
	25	parts per million	1/31/2017	14.74	Compliant
	25	parts per million	5/21/2018	9.37 (LFR 130 lb/hr)	Compliant
	25	parts per million	5/21/2018	11.48 (LFR 160 lb/hr)	Compliant
	25	parts per million	5/14/2019	9.96 (LFR 155 lb/hr)	
	95	% control efficiency	5/14/2019	98.08 (LFR 155 lb/hr)	Compliant
	25	parts per million	5/14/2019	14.93 (LFR 132 lb/hr)	
	95	% control efficiency	5/14/2019	97.35 (LFR 132 lb/hr)	Compliant
	25	parts per million	5/11/2020	6.17 (LFR 130 lb/hr)	
	95	% control efficiency	5/11/2020	99.26 (LFR 130 lb/hr)	Compliant
	25	parts per million	5/11/2020	12.48 (LFR 160 lb/hr)	
	95	% control efficiency	5/11/2020	98.19 (LFR 160 lb/hr)	Compliant
	25	parts per million	5/11/2021	28.08 (LFR 160 lb/hr)	
	95	% control efficiency	5/11/2021	96.04 (LFR 160 lb/hr)	Compliant
	25	parts per million	5/11/2021	29.79 (LFR 130 lb/hr)	
	95	% control efficiency	5/11/2021	94.72 (LFR 130 lb/hr)	Noncompliant
	25	parts per million	5/14/2024	13.2	Compliant
	25	parts per million	5/14/2024	24.3 (LFR 142 lb/hr)	Compliant
Lead	0.2	milligrams per dscm	1/20/2015	0.0067	Compliant
			12/3/2015	0.017	Compliant
			1/31/2017	0.0206	Compliant
			5/21/2018	0.01	Compliant
			5/11/2021	0.011	Compliant
			5/14/2024	0.0066	Compliant
Mercury	0.08	milligrams per dscm	1/20/2015	0.001	Compliant
	41	µg/dscm	1/20/2015	1.05	Compliant
	85	% control efficiency	1/20/2015	99.7	Compliant
	41	µg/dscm	4/23/2015	0.45	Compliant
	85	% control efficiency	4/23/2015	97.3	Compliant
	0.08	milligrams per dscm	12/3/2015	0.008	Compliant

Parameter	Limit	Units	Stack Test Start Date	Tested Result*	Status
	41	µg/dscm	12/3/2015	0.81	Compliant
	0.08	milligrams per dscm	3/1/2016	0.001	Compliant
	41	µg/dscm	3/1/2016	1.01	Compliant
	85	% control efficiency	3/1/2016	98.31	Compliant
	41	µg/dscm	3/1/2016	1.01	Compliant
	0.08	milligrams per dscm	1/31/2017	0.00085	Compliant
	41	µg/dscm	1/31/2017	0.85	Compliant
	0.08	milligrams per dscm	5/21/2018	0.00029	Compliant
	41	µg/dscm	5/21/2018	0.29	Compliant
	0.08	milligrams per dscm	5/11/2021	0.00065	Compliant
	41	µg/dscm	5/11/2021	0.652	Compliant
	0.08	milligrams per dscm	5/14/2024	0.0013	Compliant
	41	µg/dscm	5/14/2024	1.3	Compliant
Fugitive Ash Opacity	5	% opacity	1/20/2015	0	Compliant
			1/31/2017	0	Compliant
Opacity	10	% opacity	1/20/2015	0	Compliant
			1/31/2017	0	Compliant
			5/21/2018	0.42	Compliant
			5/11/2021	0	Compliant
			5/14/2024	0	Compliant
Filterable PM	0.015	gr/dscf	1/20/2015	0.0015	Compliant
	24	milligrams per dscm	1/20/2015	3.34	Compliant
	0.015	gr/dscf	12/3/2015	0.0029	Compliant
	24	milligrams per dscm	12/3/2015	6.69	Compliant
	24	milligrams per dscm	1/31/2017	3.84	Compliant
	24	milligrams per dscm	5/21/2018	6.21	Compliant
	24	milligrams per dscm	5/11/2021	8.09	Compliant
	0.015	gr/dscf	5/14/2024	0.0015	Compliant
	24	milligrams per dscm	5/14/2024	6.3	Compliant
PM	0.02	gr/dscf	1/20/2015	0.002	Compliant
			12/3/2015	0.0035	Compliant
			1/31/2017	0.0018	Compliant
			5/21/2018	0.0031	Compliant
			5/11/2021	0.0038	Compliant
			5/14/2024	0.0027	Compliant

*LFR = Lime Feed Rate

Table 7. Performance Tests for EQUI 36 North MSW Incinerator

Parameter	Limit	Units	Stack Test Start Date	Tested Result*	Status
Cadmium	0.1	milligrams per dscm	5/6/2014	0.0022	Compliant
			5/9/2017	0.0056	Compliant
			5/11/2020	0.0053	Compliant
			5/2/2023	0.0024	Compliant
Dioxins/Furans	20	nanograms per dscm	5/6/2014	1.36	Compliant
			5/9/2017	2.41	Compliant
			5/11/2020	0.613	Compliant
			5/2/2023	0.014	Compliant
HCl	250	parts per million	5/6/2014	52.2	Compliant
			5/9/2017	38.07	Compliant
			5/11/2020	18.99 (LFR 130 lb/hr)	Compliant
			5/11/2020	26.57 (LFR 160 lb/hr)	Compliant

			5/2/2023	26.4 (LFR 157 lb/hr)	Compliant
			5/2/2023	29.2 (LFR 128 lb/hr)	Compliant
Lead	1.6	milligrams per dscm	5/6/2014	0.0091	Compliant
			5/9/2017	0.027	Compliant
			5/11/2020	0.034	Compliant
			5/2/2023	0.019	Compliant
Mercury	0.08	milligrams per dscm	5/6/2014	0.001	Compliant
	41	µg/dscm	5/6/2014	1.097	Compliant
	85	% control efficiency	5/6/2014	95.7	Compliant
	0.08	milligrams per dscm	5/9/2017	0.0019	Compliant
	41	µg/dscm	5/9/2017	1.89	Compliant
	0.08	milligrams per dscm	5/11/2020	0.0014	Compliant
	41	µg/dscm	5/11/2020	1.42	Compliant
	0.08	milligrams per dscm	5/2/2023	0.0018	Compliant
	41	µg/dscm	5/2/2023	1.8	Compliant
Fugitive Ash Opacity	5	% opacity	5/6/2014	0	Compliant
			5/19/2020	0	Compliant
Opacity	10	% opacity	5/6/2014	0	Compliant
			5/9/2017	0	Compliant
			5/11/2020	0	Compliant
			5/2/2023	0	Compliant
Filterable PM	70	milligrams per dscm	5/6/2014	10.47	Compliant
			5/9/2017	4.53	Compliant
			5/11/2020	12.49	Compliant
			5/2/2023	19.6	Compliant
PM	0.02	gr/dscf	5/6/2014	0.0051	Compliant
			5/9/2017	0.0027	Compliant
			5/11/2020	0.0063	Compliant
			5/2/2023	0.0059	Compliant

*LFR = Lime Feed Rate

3.4 Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- the likelihood of the facility violating the applicable requirements;
- whether add-on controls are necessary to meet the emission limits;
- the variability of emissions over time;
- the type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- the technical and economic feasibility of possible periodic monitoring methods; and
- the kind of monitoring found on similar units elsewhere.

The Table below summarizes the monitoring requirements.

Table 8. Monitoring

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
EQUI 33 - Auxiliary Boiler w/ FGR and low NOx burners	Recordkeeping [40 CFR 60.48c(g), Minn. R. 7011.0570]	Monthly recordkeeping of the type and amount of fuel used	Monitoring required by 40 CFR pt. 60, subp. Dc is adequate to demonstrate compliance with the standard.
	Work Practice Standards [40 CFR pt. 63, subp. DDDDD, Minn. R. 7011.7050]	Boiler tune-ups every 5 years; maintain an optimum air to fuel ratio; recordkeeping, reporting	Monitoring required by 40 CFR pt. 63, subp. DDDDD is adequate to demonstrate compliance with the requirements of the standard because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS and NESHAPs contain adequate monitoring requirements.
EQUI 35 - South MSW Incinerator	PM <= 0.020 gr/dscf [Minn. R. 7011.1229]	Performance testing: annually or every 30 or 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	PM <= 24 mg/dscm [40 CFR 60.1210(b)(5), 40 CFR 60.1215, Minn. R. 7011.1293]		
	Filterable PM <= 0.015 gr/dscf. [Minn. R. 7011.1229]		
	Opacity <= 10% opacity [40 CFR 60.1210(b)(4), 40 CFR 60.1215, Minn. R. 7011.1229, Minn. R. 7011.1260, subp. 4(F), Minn. R. 7011.1293]	Performance testing: annually or every 30 or 36 months if qualified for a reduced testing frequency; COMS	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Muni Waste Combust Organics <= 30 ng/dscm, measured as total PCDD/PCDF. [Minn. R. 7011.1229, Minn. R. 7011.1265, subp. 3(B)]	Performance testing: annually or every 30 or 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Muni Waste Combust Organics <= 13 ng/dscm measured as dioxins/furans [40 CFR 60.1210(a), 40 CFR 60.1215, Minn. R. 7011.1293]		
	Cd <= 0.020 mg/dscm, 3-run average [40 CFR 60.1210(b)(2), 40 CFR 60.1215, Minn. R. 7011.1293]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 60, subp. AAAA is adequate to demonstrate compliance with the standards.
	Pb <= 0.20 mg/dscm, 3-run average [40 CFR 60.1210(b)(2), 40 CFR 60.1215, Minn. R. 7011.1293]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 60, subp. AAAA is adequate to demonstrate compliance with the standards.
	Hg <= 41.0 µg/dscm [Minn. R. 7007.0800, subp. 2(A)]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Hg <= 100 µg/dscm (short-term), or 85% removal. [Minn. R. 7011.1229]		
	Hg <= 60 µg/dscm (long-term), or 85% removal. [Minn. R. 7011.1229]		
	Hg <= 0.080 mg/dscm, or 85% reduction of potential Hg [40 CFR 60.1210(b)(3), 40 CFR 60.1215, Minn. R. 7011.1293]		

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	HCl <= 25 ppm by dry volume or 95% reduction of potential HCl [40 CFR 60.1210(c)(1), 40 CFR 60.1215, Minn. R. 7011.1293]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	HCl <= 25 ppm or 90% control. [Minn. R. 7011.1229]		
	NO_X <= 500 ppm by dry volume, measured at 7% oxygen. [40 CFR 60.1210(c)(2), 40 CFR 60.1215, Minn. R. 7011.1293]	No monitoring, testing, recordkeeping, or reporting is required to demonstrate compliance.	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards. 500 ppm is equal to 39.4 lb NOx/hour for EQUI 35 and the PTE is 11.8 lb NO_X/hour.
	CO <= 100 ppm 4-hour block average, arithmetic mean [40 CFR 60.1210(d)(1), 40 CFR 60.1215, Minn. R. 7011.1229, Minn. R. 7011.1260, subp. 4(C), Minn. R. 7011.1293]	CEMs	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	SO_2 <= 30 ppm 24-hour block average geometric concentration by dry volume, measured at 7% oxygen or 80% reduction of potential SO_2 [40 CFR 60.1210(c)(3), 40 CFR 60.1215, Minn. R. 7011.1229, Minn. R. 7011.1260, subp. 4(D), Minn. R. 7011.1293]	CEMs	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Steam Flow <= 27,715 lb/hr, 4-hour block average [40 CFR 60.1200(a), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1260, subp. 4(B), Minn. R. 7011.1265, subp. 7, Minn. R. 7011.1293, Minn. R. 7017.2025, subp. 3]	Continuous monitoring; performance testing	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Fugitive ash Visible Emissions <= 5% [40 CFR 60.1210(d)(2), 40 CFR 60.1215, Minn. R. 7011.1293]	Visible emission observation testing, annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 60, subp. AAAA is adequate to demonstrate compliance with the standards.
EQUI 36 - North MSW Incinerator	PM <= 0.020 gr/dscf [Minn. R. 7011.1227]	Performance testing: annually or every 30 or 36 months if	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	PM <= 70 mg/dscm, 3-run average [40 CFR 62.15155(b)(5), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]	qualified for a reduced testing frequency	
	Opacity <= 10 % opacity 6-minute average [40 CFR 62.15155(b)(4), 40 CFR 62.15160(a)(2), Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(F), Minn. R. 7011.1295]	Performance testing: annually or every 30 or 36 months if qualified for a reduced testing frequency; COMs	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Hg <= 41.0 µg/dscm [Minn. R. 7007.0800, subp. 2(A)]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Hg <= 60 µg/dscm (long term) or 85% removal. [Minn. R. 7011.1227]		
	Hg <= 100 µg/dscm (short term) or 85% removal. [Minn. R. 7011.1227]		
	Hg <= 0.080 mg/dscm or 85% reduction of potential Hg, 3-run average [40 CFR 62.15155(b)(3), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]		

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Muni Waste Combust Organics <= 20.0 ng/dscm [Minn. R. 7007.0800, subp. 2(A)]	Performance testing: annually or every 30 or 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Muni Waste Combust Organics <= 125 ng/dscm measured as dioxins/furans [40 CFR 62.15155(a), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]		
	Muni Waste Combust Organics <= 500 ng/dscm, measured as total PCDD/PCDF. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(B)]		
	Cd <= 0.10 mg/dscm 3-run average [40 CFR 62.15155(b)(1), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 62, subp. JJJ is adequate to demonstrate compliance with the standard.
	HCl <= 250 ppm by volume or 50% reduction of potential HCl [40 CFR 62.15155(c)(1), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 62, subp. JJJ is adequate to demonstrate compliance with the standard.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	CO <= 100 ppm 4-hour block average [40 CFR 62.15155(d)(1), 40 CFR 62.15160(a)(3), 40 CFR 62.15180, Minn. R. 7011.1227, Minn. R. 7011.1295]	CEMs	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Pb <= 1.6 mg/dscm, 3-run average [40 CFR 62.15155(b)(2), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]	Performance testing: annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 62, subp. JJJ is adequate to demonstrate compliance with the standard.
	SO_2 <= 77 ppm 24-hour block average geometric concentration by dry volume, measured at 7% oxygen or 50% reduction of potential SO_2 [40 CFR 62.15155(c)(3), 40 CFR 62.15160(a)(2), 40 CFR 62.15180, Minn. R. 7011.1295]	CEMs	Monitoring required by 40 CFR pt. 62, subp. JJJ is adequate to demonstrate compliance with the standard.
	NO_X <= 500 ppm by dry volume, measured at 7% oxygen [40 CFR 62.15155(c)(2), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]	No monitoring, testing, recordkeeping, or reporting is required to demonstrate compliance	Monitoring required by 40 CFR pt. 62, subp. JJJ is adequate to demonstrate compliance with the standard. 500 ppm is equal to 39.4 lb NOx/hour for EQUI 36. The potential-to-emit is 11.8 lb NO_X/hour.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Steam Flow <= 25,681 pounds per hour 4-hour block average. [40 CFR 62.15145(a), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1265, subp. 7, Minn. R. 7011.1295, Minn. R. 7017.2025, subp. 3]	Continuous monitoring; performance testing	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Fugitive Combustion Ash Visible Emissions <= 5% [40 CFR 62.15155(d)(2), 40 CFR 62.15160(a)(2), Minn. R. 7011.1225, subp. 1(B), Minn. R. 7011.1295]	Visible emission observation testing, annually or every 36 months if qualified for a reduced testing frequency	Monitoring required by 40 CFR pt. 62, subp. JJJ is adequate to demonstrate compliance with the standard.
STRU 5 – Combined MWC Stack	Stack height >= 125.0 ft above ground level [Minn. R. 7007.0800, subp. 2(A)]	No monitoring, testing, recordkeeping, or reporting is required to demonstrate compliance	Once installed, stack height is fixed; therefore no monitoring is required to demonstrate compliance.
TREA 1 – Fabric Filter (EQUI 36)	Pressure Drop >= 0.5 and <= 10.0 inches of water [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A)]	Periodic inspections, continuous pressure drop monitoring, operation and maintenance, corrective actions, and recordkeeping	Monitoring and recordkeeping of the pressure drop at least once every hour while in operation and calculation of a 4-hour rolling average of the pressure drop provides a reasonable assurance of compliance.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Temperature <= 396° F 4-hour block average [40 CFR 62.15145(b), Minn. R. 7011.1240, subp. 2, Minn. R. 7011.1295, Minn. R. 7017.2025, subp. 3]	Continuous monitoring; performance testing	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
TREA 2 – Dry Limestone Injection (EQUI 36)	Lime Feed Rate >= 126.67 pounds per hour, 8-hour block average [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7017.2025, subp. 3a]	Continuous monitoring; performance testing	Continuous monitoring and recordkeeping for lime feed rate when EQUI 36 is in operation is required to maintain and ensure TREA 2 proper performance to demonstrate compliance with applicable requirements.
TREA 3 – Activated Carbon Adsorption (EQUI 36)	Hg additive >= 3.8 lb/hour 8-hour block average [40 CFR 62.15145(c), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1272, subp. 2, Minn. R. 7011.1295, Minn. R. 7017.2025, subp. 3]	Continuous monitoring; quarterly additive usage calculations; performance testing	Monitoring required by 40 CFR pt. 62, subp. JJJ and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
TREA 4 – Fabric Filter (EQUI 35)	Pressure Drop >= 0.5 and <= 10 inches of water [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 14]	Periodic inspections, continuous pressure drop monitoring, operation and maintenance, corrective actions, and recordkeeping	Monitoring and recordkeeping of the pressure drop at least once every hour while in operation and calculation of a 4-hour rolling average of the pressure drop provides a reasonable assurance of compliance.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Temperature <= 361° F 4-hour block average [40 CFR 60.1200(b), Minn. R. 7011.1240, subp. 2, Minn. R. 7011.1293, Minn. R. 7017.2025, subp. 3]	Continuous monitoring; performance testing	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
TREA 5 – Dry Limestone Injection (EQUI 35)	Lime Feed Rate as >= 142.0 pounds per hour, 8-hour block average [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7017.2025, subp. 3a]	Continuous monitoring; performance testing	Continuous monitoring and recordkeeping for lime feed rate when EQUI 35 is in operation is required to maintain and ensure TREA 5 proper performance to demonstrate compliance with applicable requirements.
TREA 6 – Activated Carbon Adsorption (EQUI 35)	Hg additive >= 4.0 lb/hr 8-hour block average [40 CFR 60.1200(c), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1272, subp. 2, Minn. R. 7011.1293, Minn. R. 7017.2025, subp. 3]	Continuous monitoring; quarterly additive usage calculations; performance testing	Monitoring required by 40 CFR pt. 60, subp. AAAA and the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

3.5 Insignificant activities

Perham Resource Recovery Facility has several operations which are classified as insignificant activities under the MPCA's permitting rules. These are listed in Appendix A to the permit.

The permit is required to include periodic monitoring for all emissions units, including insignificant activities, per EPA guidance. The insignificant activities at this Facility are only subject to general applicable requirements. Using the criteria outlined earlier in this TSD, the following table documents the justification why no additional periodic monitoring is necessary for the current insignificant activities. See Attachment 1 of this TSD for PTE information for the insignificant activities.

Table 9. Insignificant activities

Insignificant activity	General applicable emission limit	Discussion
Indirect heating equipment with a heat input capacity less than 420,000 Btu/hour, etc.	PM <= 0.4 Opacity <= 20% with exceptions (Minn. R. 7011.0515)	*Furnace; 135,000 Btu/hr heat input.* For this unit, based on the fuel used and EPA published emissions factors, it is highly unlikely that the unit could violate the applicable requirement.
Brazing, soldering, torch-cutting, or welding equipment	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011.0715)	*Welding equipment.* Based on EPA published emissions factors, welding emissions are unlikely to violate the applicable requirement. In addition, welding is typically operated and vented inside a building, so testing for PM or opacity is not feasible.
Individual units with potential emissions less than 2000 lb/year of certain pollutants	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011.0715)	*Lime handling and storage, cooling towers, materials recovery facility (MRF), and 15 natural gas space heaters each rated 350,000 Btu/hr or less.* Based on calculated emissions for lime handling and storage and cooling towers, either activity is unlikely to violate the applicable requirement. The MRF is unlikely to violate the applicable requirement and is operated and vented inside a building where testing for PM or opacity is not feasible.
Fugitive dust emissions from unpaved roads and parking lots	Requirement to take reasonable measures to prevent PM from becoming airborne (Minn. R. 7011.0150)	The Facility has paved parking lots and few private unpaved roads. The permit contains a general requirement that this standard must be met.

3.6 Permit organization and standard language

This permit mostly meets the MPCA Tempo Guidance for ordering and grouping of requirements.

Requirements for some of the applicable NESHAPs and NSPS (40 CFR pt. 63, subps. A and DDDDD, and 40 CFR pt. 60, subps. A) are included in the permit as a requirement in Section 5 of the permit which lists the citations of all of the applicable parts of the standard along with a reference to the permit appendix where the full text of the standard is included.

Requirements for 40 CFR pt. 62, subp. JJJ and 40 CFR pt. 60, subp. AAAA are incorporated into the permit as individual permit requirements. Listing the rules in this manner ensures the permit is clear for PRRF and the public. Additionally, 40 CFR pt. 62, subp. JJJ and 40 CFR pt. 60, subp. AAAA federal requirements and the Minnesota standards of performance for waste combustors overlap. Listing the requirements individually with all applicable rules cited provides transparency of the differences and similarities of these rules.

When amending or reissuing an air permit, MPCA staff evaluate standard permit language in the permit. If the standard language has been changed in the Tempo database since the last permit was issued, staff need to decide how to proceed for each revised condition. For this permit action, all standard language was updated in the permit.

3.7 Comments received

This section will be completed after the referenced review periods.

Public Notice Period: [start date] – [end date]

EPA Review Period: [start date] – [end date]

4. Permit fee assessment

This permit action is the reissuance of an individual Part 70; therefore, no application fees apply under Minn. R. 7002.0016, subp. 1 to the changes that are covered by the reissuance application. The permit action rolls in an additional permit application to which fees do apply, however none of the activities associated with the administrative amendment are chargeable and no additional fees are required.

5. Conclusion

Based on the information provided by Perham Resource Recovery Facility the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 11100036-101 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff members on permit team: Andrea Behrendt (permit engineer)
Alexandria Clark (enforcement)
Tarik Hanafy (peer reviewer)
Ross Provow (compliance)
Leah Waller (data coordinator)
Beckie Olson (permit writing assistant)
Laurie O'Brien (administrative support)

Tempo Activities: Administrative Amendment (IND20130001), Part 70 Reissuance (IND20170001)

Attachments:
1. PTE summary calculation spreadsheets
2. Subject item inventory and facility requirements

Attachment 1 – PTE Summary and Calculation Spreadsheets

GI-07-R Spreadsheet (Alternate Format)
Facility Emissions Summary

1a) AQ Facility ID No.: **11100036** 1b) Agency Interest ID No.: **726 (old AQ File Number 116H)**
2) Facility Name: **Perham Resource Recovery Facility**

Emissions by Source Table

a) Delta ID No.:		**South MSW Incinerator (EU001)**			**North MSW Incinerator**			**Auxiliary Boiler**		
b) Tempo SI ID No.:		EQUI 35			EQUI 36			EQUI 33		
c)	**d)**	**e)** Potential			**e)** Potential			**e)** Potential		
Pollutant Name	CAS #	Lbs per Hr	Unc tpy	Limited tpy	Lbs per Hr	Unc tpy	Limited tpy	Lbs per Hr	Unc tpy	Limited tpy
PM	--	1.88	1,011.31	8.23	1.88	1,011.31	8.23	6.22E-01	2.73	2.73
PM_{10}	--	0.44	1,011.31	1.93	0.44	1,011.31	1.93	6.22E-01	2.73	2.73
$PM_{2.5}$	--	0.44	1,011.31	1.93	0.44	1,011.31	1.93	6.22E-01	2.73	2.73
SO_2	7446-09-5	3.28	56.67	14.34	8.41	56.67	36.82	4.91E-02	2.15E-01	2.15E-01
NO_x	10102-44-0	39.38	51.73	51.73	39.38	51.73	51.73	8.19	35.86	11.47
VOC	--	0.42	1.83	1.83	0.42	1.83	1.83	4.50E-01	1.97	1.97
CO	7440-48-4	3.92	27.90	17.16	3.92	27.90	17.16	6.88	30.12	30.12
MWC Acid Gases (SO_2 and HCl)	--	4.84	157.94	21.19	24.03	157.94	105.26	--	--	--
CO_2e	--	9,375	41,063	41,063	9,375	41,063	41,063	9,778	42,826	42,826
Lead	7439-92-1	8.21E-03	2.92	3.60E-02	6.57E-02	2.92	2.88E-01	4.09E-05	1.79E-04	1.79E-04
Cadmium	7440-43-9	8.21E-04	1.27E-01	3.60E-03	4.10E-03	1.27E-01	1.80E-02	9.00E-05	3.94E-04	3.94E-04
Mercury	7439-97-6	1.68E-03	7.99E-02	7.37E-03	1.68E-03	7.99E-02	7.37E-03	2.13E-05	9.32E-05	9.32E-05
Hydrogen Chloride (HCl)	9004-54-0	1.56	101.28	6.84	15.63	101.28	68.44	--	--	--
Hydrogen Fluoride (HF)	7782-41-4	1.66E-02	7.27E-02	7.27E-02	1.66E-02	7.27E-02	7.27E-02	--	--	--
Dioxins/Furans	--	5.34E-07	2.34E-06	2.34E-06	8.21E-07	3.60E-06	3.60E-06	--	--	--
Acetaldehyde	75-07-0	1.92E-04	8.41E-04	8.41E-04	1.92E-04	8.41E-04	8.41E-04	--	--	--
Acrolein	107-02-8	1.63E-04	7.14E-04	7.14E-04	1.63E-04	7.14E-04	7.14E-04	--	--	--
1,4-Dichlorobenzene	106-46-7	8.24E-06	3.61E-05	3.61E-05	8.24E-06	3.61E-05	3.61E-05	9.82E-05	4.30E-04	4.30E-04
2,4-Dinitrotoluene	121-14-2	9.13E-06	4.00E-05	4.00E-05	9.13E-06	4.00E-05	4.00E-05	--	--	--
bis(2-ethylhexyl)phthalate	117-81-7	3.70E-05	1.62E-04	1.62E-04	3.70E-05	1.62E-04	1.62E-04	--	--	--
Dibenzofuran	132-64-9	2.38E-06	1.04E-05	1.04E-05	2.38E-06	1.04E-05	1.04E-05	--	--	--
Formaldehyde	50-00-0	5.63E-04	2.46E-03	2.46E-03	5.63E-04	2.46E-03	2.46E-03	6.14E-03	2.69E-02	2.69E-02
Hexane	110-54-3	--	--	--	--	--	--	1.47E-01	6.45E-01	6.45E-01
Hexachlorobenzene	118-74-1	5.39E-06	2.36E-05	2.36E-05	5.39E-06	2.36E-05	2.36E-05	--	--	--
Hexachlorobutadiene	87-68-3	7.74E-06	3.39E-05	3.39E-05	7.74E-06	3.39E-05	3.39E-05	--	--	--
Hexachlorocyclopentadiene	77-47-4	7.54E-06	3.30E-05	3.30E-05	7.54E-06	3.30E-05	3.30E-05	--	--	--
Hexachloroethane	67-72-1	1.49E-05	6.53E-05	6.53E-05	1.49E-05	6.53E-05	6.53E-05	--	--	--
Isophorone	78-59-1	3.52E-06	1.54E-05	1.54E-05	3.52E-06	1.54E-05	1.54E-05	--	--	--
Naphthalene	91-20-3	3.20E-05	1.40E-04	1.40E-04	3.20E-05	1.40E-04	1.40E-04	4.99E-05	2.19E-04	2.19E-04
Nitrobenzene	98-95-3	6.82E-06	2.99E-05	2.99E-05	6.82E-06	2.99E-05	2.99E-05	--	--	--
Pentachlorophenol	87-86-5	1.06E-05	4.63E-05	4.63E-05	1.06E-05	4.63E-05	4.63E-05	--	--	--
Phenol	108-95-2	4.17E-04	1.83E-03	1.83E-03	4.17E-04	1.83E-03	1.83E-03	--	--	--
POM total	-	7.00E-05	3.06E-04	3.06E-04	7.00E-05	3.06E-04	3.06E-04	7.22E-06	3.16E-05	3.16E-05
1,2,4-Trichlorobenzene	120-82-1	5.66E-06	2.48E-05	2.48E-05	5.66E-06	2.48E-05	2.48E-05	--	--	--
2,4,6-Trichlorophenol	88-06-2	8.45E-06	3.70E-05	3.70E-05	8.45E-06	3.70E-05	3.70E-05	--	--	--
Antimony	7440-36-0	3.08E-04	1.35E-03	1.35E-03	3.08E-04	1.35E-03	1.35E-03	--	--	--
Arsenic	7440-38-2	1.68E-05	7.35E-05	7.35E-05	1.68E-05	7.35E-05	7.35E-05	1.64E-05	7.17E-05	7.17E-05
Benzene	71-43-2	--	--	--	--	--	--	1.72E-04	7.53E-04	7.53E-04
Beryllium	7440-41-7	8.21E-07	3.60E-06	3.60E-06	8.21E-07	3.60E-06	3.60E-06	9.82E-07	4.30E-06	4.30E-06
Cobalt	7440-48-4	2.80E-05	1.23E-04	1.23E-04	2.80E-05	1.23E-04	1.23E-04	6.88E-06	3.01E-05	3.01E-05

GI-07-R Spreadsheet (Alternate Format)
Facility Emissions Summary

1a) AQ Facility ID No.: **11100036** 1b) Agency Interest ID No.: **726 (old AQ File Number 116H)**
2) Facility Name: **Perham Resource Recovery Facility**

Emissions by Source Table

a) Delta ID No.:		**FS002 Traffic and Paved Roads**		
b) Tempo SI ID No.:		FUGI 1		
c)	**d)**	**e)** Potential		
Pollutant Name	CAS #	Lbs per Hr	Unc tpy	Limited tpy
PM	--	6.07E-02	2.66E-01	2.66E-01
PM_{10}	--	1.21E-02	5.32E-02	5.32E-02
$PM_{2.5}$	--	2.98E-03	1.31E-02	1.31E-02
SO_2	7446-09-5	--	--	--
NO_x	10102-44-0	--	--	--
VOC	--	--	--	--
CO	7440-48-4	--	--	--
MWC Acid Gases (SO_2 and HCl)	--	--	--	--
CO_2e	--	--	--	--
Lead	7439-92-1	--	--	--
Cadmium	7440-43-9	--	--	--
Mercury	7439-97-6	--	--	--
Hydrogen Chloride (HCl)	9004-54-0	--	--	--
Hydrogen Fluoride (HF)	7782-41-4	--	--	--
Dioxins/Furans	--	--	--	--
Acetaldehyde	75-07-0	--	--	--
Acrolein	107-02-8	--	--	--
1,4-Dichlorobenzene	106-46-7	--	--	--
2,4-Dinitrotoluene	121-14-2	--	--	--
bis(2-ethylhexyl)phthalate	117-81-7	--	--	--
Dibenzofuran	132-64-9	--	--	--
Formaldehyde	50-00-0	--	--	--
Hexane	110-54-3			
Hexachlorobenzene	118-74-1	--	--	--
Hexachlorobutadiene	87-68-3			
Hexachlorocyclopentadiene	77-47-4	--	--	--
Hexachloroethane	67-72-1	--	--	--
Isophorone	78-59-1	--	--	--
Naphthalene	91-20-3	--	--	--
Nitrobenzene	98-95-3	--	--	--
Pentachlorophenol	87-86-5	--	--	--
Phenol	108-95-2	--	--	--
POM total	-	--	--	--
1,2,4-Trichlorobenzene	120-82-1	--	--	--
2,4,6-Trichlorophenol	88-06-2	--	--	--
Antimony	7440-36-0	--	--	--
Arsenic	7440-38-2	--	--	--
Benzene	71-43-2			
Beryllium	7440-41-7	--	--	--
Cobalt	7440-48-4	--	--	--

Total Facility Emissions Summary Table

f)		**g)** Potential		
Pollutant Name	CAS #	Lbs per Hr	Unrestricted (tpy)	Limited (tpy)
PM	--	4.44	2,026	19.4
PM_{10}	--	1.52	2,025	6.64
$PM_{2.5}$	--	1.51	2,025	6.60
SO_2	7446-09-5	11.73	113.6	51.38
NO_x	10102-44-0	86.94	139.3	114.9
VOC	--	1.28	5.62	5.62
CO	7440-48-4	14.71	85.92	64.43
MWC Acid Gases (SO_2 and HCl)	--	28.87	315.9	126.4
CO_2e	--	28,528	124,952	124,952
Lead	7439-92-1	7.39E-02	5.84	3.24E-01
Cadmium	7440-43-9	5.02E-03	2.55E-01	2.20E-02
Mercury	7439-97-6	3.39E-03	1.60E-01	1.48E-02
Hydrogen Chloride (HCl)	9004-54-0	17.19	202.6	75.28
Hydrogen Fluoride (HF)	7782-41-4	3.32E-02	1.45E-01	1.45E-01
Dioxins/Furans	--	1.35E-06	5.93E-06	5.93E-06
Acetaldehyde	75-07-0	3.84E-04	1.68E-03	1.68E-03
Acrolein	107-02-8	3.26E-04	1.43E-03	1.43E-03
1,4-Dichlorobenzene	106-46-7	1.15E-04	5.02E-04	5.02E-04
2,4-Dinitrotoluene	121-14-2	1.83E-05	8.00E-05	8.00E-05
bis(2-ethylhexyl)phthalate	117-81-7	7.41E-05	3.24E-04	3.24E-04
Dibenzofuran	132-64-9	4.77E-06	2.09E-05	2.09E-05
Formaldehyde	50-00-0	7.27E-03	3.18E-02	3.18E-02
Hexane	110-54-3	1.47E-01	6.45E-01	6.45E-01
Hexachlorobenzene	118-74-1	1.08E-05	4.72E-05	4.72E-05
Hexachlorobutadiene	87-68-3	1.55E-05	6.78E-05	6.78E-05
Hexachlorocyclopentadiene	77-47-4	1.51E-05	6.60E-05	6.60E-05
Hexachloroethane	67-72-1	2.98E-05	1.31E-04	1.31E-04
Isophorone	78-59-1	7.05E-06	3.09E-05	3.09E-05
Naphthalene	91-20-3	1.14E-04	4.99E-04	4.99E-04
Nitrobenzene	98-95-3	1.36E-05	5.98E-05	5.98E-05
Pentachlorophenol	87-86-5	2.12E-05	9.27E-05	9.27E-05
Phenol	108-95-2	8.34E-04	3.65E-03	3.65E-03
POM total	-	1.47E-04	6.45E-04	6.45E-04
1,2,4-Trichlorobenzene	120-82-1	1.13E-05	4.96E-05	4.96E-05
2,4,6-Trichlorophenol	88-06-2	1.69E-05	7.40E-05	7.40E-05
Antimony	7440-36-0	6.16E-04	2.70E-03	2.70E-03
Arsenic	7440-38-2	4.99E-05	2.19E-04	2.19E-04
Benzene	71-43-2	1.72E-04	7.53E-04	7.53E-04
Beryllium	7440-41-7	2.62E-06	1.15E-05	1.15E-05
Cobalt	7440-48-4	6.29E-05	2.76E-04	2.76E-04

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)

Facility name: Perham Resource Recovery Facility

Unit ID: EQUI 35 South MSW Incinerator (EU001)

Stack ID: STRU 5 Combined MWC Stack (SV009)

STRU 2 South Unit Dump Stack - EQUI 35 (SV002)

Pollution Control Equip ID: TREA 4 Fabric Filter - High Temperature, i.e., T>250°F (CE004)

TREA 5 Dry Limestone Injection (CE005)

TREA 6 Activated Carbon Adsorption (CE006)

Maximum Operating Capacity: 45.87 MMBtu/hr

Maximum Operating Capacity/Fuel Parameters:

Fuel Type	Heat Value (HV) [1]		Maximum Fuel Consumption Rate Hourly Average Basis		Fuel Consumption Annual Average Basis	
					Maximum	Units
MSW, RDF	4,379	Btu/lb	4.17	ton/hr	100	ton/day

[1] 4,379 Btu/lb heat content from 2012 Solid Waste Composition Study Report

GHG Pollutant	GWP*	Emission Factor	Uncontrolled Emission Rate	
		(lb/MMbtu)	(lb/hr)	(tpy)
CO_2	1	199.96	9,172.04	40,173.53
CH_4	28	7.05E-02	3.24	14.17
N_2O	265	9.26E-03	0.42	1.86
Total GHG (CO_2e)			9,375.20	41,063.37

Emission Factors based on 40 CFR pt. 98, Table C-1 and C-2. Converted from kg to lbs:

	EF (kg/MMBtu)	Conversion factor (lb/kg)	EF (lb/MMBtu)
CO_2	9.1E+01	2.2046	199.96
CH_4	3.2E-02	2.2046	7.05E-02
N_2O	4.2E-03	2.2046	9.26E-03

Calculations Summary - Processed MSW Combustion, Criteria Pollutants:

Pollutant	Uncontrolled Emission Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Performance Tested Emissions (lb/hr)
PM (total) - State only limit	69.60	lb/ton	AP-42, Ch. 2.1	0.020	gr/dscf	State, See Note 2	See Note 2		0.451	230.89	1,011.31	0%	1.88	8.23	0.41
PM (filterable)	---	---	---	0.015	gr/dscf	State, See Note 2	See Note 2		0.338	-	-	0%	1.41	6.17	0.23
	---	---	---	24	mg/dscm	AAAA, See Note 3	8.06E-03	(lb/ton)/mg/dscm	0.193	-	-	0%	0.81	3.53	
PM_{10}	69.60	lb/ton	AP-42, Ch. 2.1	0.133	lb/ton	AP-42, Ch. 2.1, Table 2.1-8	-	-	0.133	230.89	1,011.31	0%	0.44	1.93	
$PM_{2.5}$	69.60	lb/ton	AP-42, Ch. 2.1	0.133	lb/ton		-	-	0.133	230.89	1,011.31	0%	0.44	1.93	
SO_2	3.90	lb/ton	AP-42, Ch. 2.1	30	ppmvd	AAAA, See Note 3	2.62E-02	(lb/ton)/ppmv	0.786	12.94	56.67	0%	3.28	14.34	
NO_x*	3.56	lb/ton	AP-42, Ch. 2.1	500	ppmvd		1.89E-02	(lb/ton)/ppmv	9.450	11.81	51.73	0%	39.38	172.46	
VOC	0.10	lb/ton	AP-42, See Note 6	-	-	AP-42, See Note 5	-	-	-	0.42	1.83	0%	0.42	1.83	
CO	1.92	lb/ton	AP-42, Ch. 2.1	100	ppmvd	AAAA, See Note 4	9.40E-03	(lb/ton)/ppmv	0.940	6.37	27.90	0%	3.92	17.16	
MWC Acid Gases (SO_2 and HCl)[3]	---	---	---	---	---	SO_2 + HCl	---	---	1.16	36.06	157.94	0%	4.84	21.19	

*Uncontrolled PTE is less than the Limited PTE

Calculations Summary - Processed MSW Combustion, HAPs :

Pollutant	Uncontrolled Emission Factor (EF)	Units	Emission Factor Source	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	
Lead	2.01E-01	lb/ton	AP-42, Ch. 2.1	0.20	mg/dscm	AAAA, See Note 3	9.85E-03	(lb/ton)/mg/dscm	1.97E-03	0.67	2.92	0%	8.21E-03	3.60E-02	2.20E-04
Cadmium	8.75E-03	lb/ton	AP-42, Ch. 2.1	0.02	mg/dscm		9.85E-03	(lb/ton)/mg/dscm	1.97E-04	0.03	1.27E-01	0%	8.21E-04	3.60E-03	2.10E-05
Mercury	5.50E-03	lb/ton	AP-42, Ch. 2.1	41	µg/dscm	State Only, See Note 9	9.85E-06	(lb/ton)/µg/dscm	4.04E-04	0.02	7.99E-02	0%	1.68E-03	7.37E-03	3.90E-05
Hydrogen Chloride (HCl)	6.97	lb/ton	AP-42, Ch. 2.1	25	ppmvd	AAAA, See Note 3	1.50E-02	(lb/ton)/ppmvd	0.375	23.12	101.28	0%	1.56	6.84	1.1
Hydrogen Fluoride (HF)	--	--	--	5.0E-03	lb/ton	FIRE, See Note 10	-	-	5.00E-03	1.66E-02	7.27E-02	0%	1.66E-02	7.27E-02	
Total Dioxins/Furans	9.47E-06	lb/ton	AP-42, Ch. 2.1	13	ng/dscm	AAAA, See Note 3	9.85E-09	(lb/ton)/ng/dscm	1.28E-07	5.34E-07	2.34E-06	0%	5.34E-07	2.34E-06	1.20E-10
Acetaldehyde				4.68	µg/dscm	OWEF, See Note 7	9.85E-06	(lb/ton)/µg/dscm	4.61E-05	1.92E-04	8.41E-04	0%	1.92E-04	8.41E-04	
Acrolein				3.97	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	3.91E-05	1.63E-04	7.14E-04	0%	1.63E-04	7.14E-04	
1,4-Dichlorobenzene				0.20	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.98E-06	8.24E-06	3.61E-05	0%	8.24E-06	3.61E-05	
2,4-Dinitrotoluene				0.22	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.19E-06	9.13E-06	4.00E-05	0%	9.13E-06	4.00E-05	
bis(2-ethylhexyl)phthalate				0.90	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	8.89E-06	3.70E-05	1.62E-04	0%	3.70E-05	1.62E-04	
Dibenzofuran				0.06	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	5.72E-07	2.38E-06	1.04E-05	0%	2.38E-06	1.04E-05	
Formaldehyde				13.71	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.35E-04	5.63E-04	2.46E-03	0%	5.63E-04	2.46E-03	
Hexachlorobenzene				0.13	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.29E-06	5.39E-06	2.36E-05	0%	5.39E-06	2.36E-05	
Hexachlorobutadiene				0.19	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.86E-06	7.74E-06	3.39E-05	0%	7.74E-06	3.39E-05	
Hexachlorocyclopentadiene				0.18	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.81E-06	7.54E-06	3.30E-05	0%	7.54E-06	3.30E-05	
Hexachloroethane				0.36	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	3.58E-06	1.49E-05	6.53E-05	0%	1.49E-05	6.53E-05	
Isophorone				0.09	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	8.46E-07	3.52E-06	1.54E-05	0%	3.52E-06	1.54E-05	
Naphthalene				0.78	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	7.68E-06	3.20E-05	1.40E-04	0%	3.20E-05	1.40E-04	
Nitrobenzene				0.17	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.64E-06	6.82E-06	2.99E-05	0%	6.82E-06	2.99E-05	
Pentachlorophenol				0.26	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.54E-06	1.06E-05	4.63E-05	0%	1.06E-05	4.63E-05	
Phenol				10.16	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.00E-04	4.17E-04	1.83E-03	0%	4.17E-04	1.83E-03	
POM total				1.70	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.68E-05	7.00E-05	3.06E-04	0%	7.00E-05	3.06E-04	
1,2,4-Trichlorobenzene				0.14	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.36E-06	5.66E-06	2.48E-05	0%	5.66E-06	2.48E-05	
2,4,6-Trichlorophenol				0.21	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.03E-06	8.45E-06	3.70E-05	0%	8.45E-06	3.70E-05	
Antimony				7.51	µg/dscm	AP-42 for uncontolled As, Cr, and Ni EFS; OWEF 2004-2005 AERA chronic emission factors obtained from performance testing	9.85E-06	(lb/ton)/µg/dscm	7.40E-05	3.08E-04	1.35E-03	0%	3.08E-04	1.35E-03	
Arsenic	0.00437	lb/ton	AP-42, Ch. 2.1	0.409	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	4.03E-06	1.68E-05	7.35E-05	0%	1.68E-05	7.35E-05	
Beryllium				0.0	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.97E-07	8.21E-07	3.60E-06	0%	8.21E-07	3.60E-06	
Cobalt				0.683	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	6.73E-06	2.80E-05	1.23E-04	0%	2.80E-05	1.23E-04	
Chromium compunds	0.00897	lb/ton	AP-42, Ch. 2.1	24.06	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.37E-04	9.87E-04	4.33E-03	0%	9.87E-04	4.33E-03	
Manganese				117.6	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.16E-03	4.83E-03	2.11E-02	0%	4.83E-03	2.11E-02	
Nickel	0.00785	lb/ton	AP-42, Ch. 2.1	65.1	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	6.41E-04	2.67E-03	1.17E-02	0%	2.67E-03	1.17E-02	
PCBs				0.04417	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	4.35E-07	1.81E-06	7.94E-06	0%	1.81E-06	7.94E-06	
Phosphorus				164.5	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.62E-03	6.75E-03	2.96E-02	0%	6.75E-03	2.96E-02	
Selenium				0.32	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	3.15E-06	1.31E-05	5.75E-05	0%	1.31E-05	5.75E-05	
HAP Total									0.39	23.87	104.55		1.61	7.04	

[2] PM (total or filterable) is State only limit for Class II Units from Minn. Rule 7011.1229, Table 2:

0.020 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 45.77 mg/dscm

45.77 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.451 lb/ton

0.015 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 34.33 mg/dscm

34.33 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.338 lb/ton

9.85E-3 lb/ton = conversion factor for RDF combustors from AP-42, Ch. 2.1, Table 2.1-1

PRRF high historic inorganic condensible stack test result of 9.61 mg/dscm; PM (filterable + all condensible) = 55.38 mg/dscm.

[3] EFs for PM, D/F, Cd, Pb, Hg, HCl, NOx and SO2 from 40 CFR Part 60 Subpart AAAA Table 1 "Emission Limits for New Small Municipal Waste Combustion Units".

[4] CO EF limit from NSPS, Table 2 "Carbon Monoxide Emission Limits for New Small Municipal Waste Combustion Units", Mass burn rotary refractory.

[5] VOC EF from AP-42, 4th Edition Supplement C , Sept 1990, Table 2.1-1 "Emission Factors for Municipal Waste Combustors".

[6] For all EF (lb/ton) the correction factor is based on AP-42 Section 2.1 "Refuse Combustion", Table 2.1-11 "Conversion Factors For Refuse-Derived Fuel Combustors", (Oct 1996).

[7] OWEF - Olmsted Waste to Energy Facility MPCA approved emission factors.

[8] EF for Class II Units from Minn. Rule 7011.1229 Table 2 (60 ug/dscm @ 7% O_2).

[9] State only long-term Mercury limit of 41 µg/dscm @ 7% O_2 based on the Facility's HHRA.

[10] HF EF was obtained from FIRE 6.23, for source code 50100104. No HF EF was available for source code 50100105.

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)

Facility name: Perham Resource Recovery Facility

Unit ID: EQUI 36 North MSW Incinerator (EU001)

Stack ID: STRU 5 Combined MWC Stack (SV009)

STRU 3 North Unit Dump Stack - EQUI 35 (SV003)

Pollution Control Equip ID: TREA 1 Fabric Filter - High Temperature, i.e., T>250°F (CE001)

TREA 2 Dry Limestone Injection (CE002)

TREA 3 Activated Carbon Adsorption (CE003)

Maximum Operating Capacity: 45.87 MMBtu/hr

Maximum Operating Capacity/Fuel Parameters:

Fuel Type	Heat Value (HV) [1]		Maximum Fuel Consumption Rate Hourly Average Basis		Fuel Consumption Annual Average Basis	
					Maximum	Units
MSW, RDF	4,379	Btu/lb	4.17	ton/hr	100	ton/day

[1] 4,379 Btu/lb heat content from 2012 Solid Waste Composition Study Report

GHG Pollutant	GWP *	Emission Factor	Uncontrolled Emission Rate	
		(lb/MMbtu)	(lb/hr)	(tpy)
CO_2	1	199.96	9,172.04	40,173.53
CH_4	28	7.05E-02	3.24	14.17
N_2O	265	9.26E-03	0.42	1.86
Total GHG (CO_2e)			9,375.20	41,063.37

[2] Emission Factors based on 40 CFR pt. 98, Table C-1 and C-2. Converted from kg to lbs:

	EF (kg/MMBtu)	Conversion factor (lb/kg)	EF (lb/MMBtu)
CO_2	9.1E+01	2.2046	199.96
CH_4	3.2E-02	2.2046	7.05E-02
N_2O	4.2E-03	2.2046	9.26E-03

Calculations Summary - Processed MSW Combustion, Criteria Pollutants:

Pollutant	Uncontrolled Emission Factor (EF)	Units	Emission Factor Source	Emission Limit or Factor	Units	Emission Factor Source	Conversion Factor [6]		Emission Factor	Emission Rate	Maximum Uncontrolled Emissions	Pollution Control Efficiency	Maximum Controlled Emissions	Maximum Controlled Emissions	2023 Performance Tested Emission Rates
		(@ 7% O_2)		(EF)	(@ 7% O_2)		(4379 Btu/lb basis)		(lb/ton)	(lbs/hr)	(tons/yr)	(%)	(lb/hr)	(tons/yr)	(lb/hr)
PM (total) - State only limit	69.60	lb/ton	AP-42, Ch. 2.1	0.020	gr/dscf	State, See Note 2	See Note 2		0.451	230.89	1,011.31	0%	1.88	8.23	0.99
PM (filterable)	---	---	---	70	mg/dscm	JJJ, See Note 3	8.06E-03	(lb/ton)/mg/dscm	0.564	-	-	0%	2.35	10.30	0.86
PM_{10}	69.60	lb/ton	AP-42, Ch. 2.1	0.133	lb/ton	AP-42, Ch. 2.1, Table 2.1-8	-	-	0.133	230.89	1,011.31	0%	0.44	1.93	
$PM_{2.5}$	69.60	lb/ton	AP-42, Ch. 2.1	0.133	lb/ton		-	-	0.133	230.89	1,011.31	0%	0.44	1.93	
SO_2	3.90	lb/ton	AP-42, Ch. 2.1	77	ppmvd	JJJ, See Note 3	2.62E-02	(lb/ton)/ppmv	2.017	12.94	56.67	0%	8.41	36.82	
NO_x*	3.56	lb/ton	AP-42, Ch. 2.1	500	ppmvd		1.89E-02	(lb/ton)/ppmv	9.450	11.81	51.73	0%	39.38	172.46	
VOC	0.10	lb/ton	AP-42, See Note 6	-	-	AP-42, See Note 5	-	-	-	0.42	1.83	0%	0.42	1.83	
CO	1.92	lb/ton	AP-42, Ch. 2.1	100	ppmvd	JJJ, See Note 4	9.40E-03	(lb/ton)/ppmv	0.940	6.37	27.90	0%	3.92	17.16	
MWC Acid Gases (SO_2 and HCl)[3]	---	---	---	---	---	SO_2 + HCl	---	---	5.77	36.06	157.94	0%	24.03	105.26	

*Uncontrolled PTE is less than the Limited PTE

Calculations Summary - Processed MSW Combustion, HAPs :

Pollutant	Uncontrolled Emission Factor (EF)	Units	Emission Factor Source	Emission Limit or Factor	Units	Emission Factor Source	Conversion Factor [6]		Emission Factor	Emission Rate	Maximum Uncontrolled Emissions	Pollution Control Efficiency	Maximum Controlled Emissions	Maximum Controlled Emissions	Performance Tested Emission Rates
				(EF)	(@ 7% O_2)		(4379 Btu/lb basis)		(lb/ton)	(lbs/hr)	(tons/yr)	(%)	(lb/hr)	(tons/yr)	(lb/hr)
Lead	2.01E-01	lb/ton	AP-42, Ch. 2.1	1.60	mg/dscm	JJJ, See Note 3	9.85E-03	(lb/ton)/mg/dscm	1.58E-02	0.67	2.92	0%	6.57E-02	2.88E-01	7.40E-04
Cadmium	8.75E-03	lb/ton	AP-42, Ch. 2.1	0.10	mg/dscm		9.85E-03	(lb/ton)/mg/dscm	9.85E-04	0.03	1.27E-01	0%	4.10E-03	1.80E-02	9.30E-05
Mercury	5.50E-03	lb/ton	AP-42, Ch. 2.1	41	µg/dscm	State Only, See Note 9	9.85E-06	(lb/ton)/µg/dscm	4.04E-04	0.02	7.99E-02	0%	1.68E-03	7.37E-03	6.90E-05
Hydrogen Chloride (HCl)	6.97	lb/ton	AP-42, Ch. 2.1	250	ppmvd	JJJ, See Note 3	1.50E-02	(lb/ton)/ppmvd	3.750	23.12	101.28	0%	15.63	68.44	2.3
Hydrogen Fluoride (HF)	--	--	--	5.0E-03	lb/ton	FIRE, See Note 10	-		5.00E-03	1.66E-02	7.27E-02	0%	1.66E-02	7.27E-02	
Total Dioxins/Furans	9.47E-06	lb/ton	AP-42, Ch. 2.1	20	ng/dscm	JJJ, See Note 3	9.85E-09	(lb/ton)/ng/dscm	1.97E-07	8.21E-07	3.60E-06	0%	8.21E-07	3.60E-06	5.70E-10
Acetaldehyde				4.68	µg/dscm	OWEF, See Note 7	9.85E-06	(lb/ton)/µg/dscm	4.61E-05	1.92E-04	8.41E-04	0%	1.92E-04	8.41E-04	
Acrolein				3.97	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	3.91E-05	1.63E-04	7.14E-04	0%	1.63E-04	7.14E-04	
1,4-Dichlorobenzene				0.20	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.98E-06	8.24E-06	3.61E-05	0%	8.24E-06	3.61E-05	
2,4-Dinitrotoluene				0.22	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.19E-06	9.13E-06	4.00E-05	0%	9.13E-06	4.00E-05	
bis(2-ethylhexyl)phthalate				0.90	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	8.89E-06	3.70E-05	1.62E-04	0%	3.70E-05	1.62E-04	
Dibenzofuran				0.06	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	5.72E-07	2.38E-06	1.04E-05	0%	2.38E-06	1.04E-05	
Formaldehyde				13.71	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.35E-04	5.63E-04	2.46E-03	0%	5.63E-04	2.46E-03	
Hexachlorobenzene				0.13	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.29E-06	5.39E-06	2.36E-05	0%	5.39E-06	2.36E-05	
Hexachlorobutadiene				0.19	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.86E-06	7.74E-06	3.39E-05	0%	7.74E-06	3.39E-05	
Hexachlorocyclopentadiene				0.18	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.81E-06	7.54E-06	3.30E-05	0%	7.54E-06	3.30E-05	
Hexachloroethane				0.36	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	3.58E-06	1.49E-05	6.53E-05	0%	1.49E-05	6.53E-05	
Isophorone				0.09	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	8.46E-07	3.52E-06	1.54E-05	0%	3.52E-06	1.54E-05	
Naphthalene				0.78	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	7.68E-06	3.20E-05	1.40E-04	0%	3.20E-05	1.40E-04	
Nitrobenzene				0.17	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.64E-06	6.82E-06	2.99E-05	0%	6.82E-06	2.99E-05	
Pentachlorophenol				0.26	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.54E-06	1.06E-05	4.63E-05	0%	1.06E-05	4.63E-05	
Phenol				10.16	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.00E-04	4.17E-04	1.83E-03	0%	4.17E-04	1.83E-03	
POM total				1.70	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.68E-05	7.00E-05	3.06E-04	0%	7.00E-05	3.06E-04	
1,2,4-Trichlorobenzene				0.14	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.36E-06	5.66E-06	2.48E-05	0%	5.66E-06	2.48E-05	
2,4,6-Trichlorophenol				0.21	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.03E-06	8.45E-06	3.70E-05	0%	8.45E-06	3.70E-05	
Antimony				7.51	µg/dscm	AP-42 for uncontolled As, Cr, and Ni EFS; OWEF 2004-2005 AERA chronic emission factors obtained from performance testing	9.85E-06	(lb/ton)/µg/dscm	7.40E-05	3.08E-04	1.35E-03	0%	3.08E-04	1.35E-03	
Arsenic	0.00437	lb/ton	AP-42, Ch. 2.1	0.409	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	4.03E-06	1.68E-05	7.35E-05	0%	1.68E-05	7.35E-05	
Beryllium				0.0	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.97E-07	8.21E-07	3.60E-06	0%	8.21E-07	3.60E-06	
Cobalt				0.683	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	6.73E-06	2.80E-05	1.23E-04	0%	2.80E-05	1.23E-04	
Chromium compunds	0.00897	lb/ton	AP-42, Ch. 2.1	24.06	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	2.37E-04	9.87E-04	4.33E-03	0%	9.87E-04	4.33E-03	
Manganese				117.6	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.16E-03	4.83E-03	2.11E-02	0%	4.83E-03	2.11E-02	
Nickel	0.00785	lb/ton	AP-42, Ch. 2.1	65.1	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	6.41E-04	2.67E-03	1.17E-02	0%	2.67E-03	1.17E-02	
PCBs				0.04417	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	4.35E-07	1.81E-06	7.94E-06	0%	1.81E-06	7.94E-06	
Phosphorus				164.5	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	1.62E-03	6.75E-03	2.96E-02	0%	6.75E-03	2.96E-02	
Selenium				0.32	µg/dscm		9.85E-06	(lb/ton)/µg/dscm	3.15E-06	1.31E-05	5.75E-05	0%	1.31E-05	5.75E-05	
HAP Total									3.78	23.87	104.55		15.73	68.90	

[2] PM (total or filterable) is State only limit for Class II Units from Minn. Rule 7011.1229, Table 2:

0.020 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 45.77 mg/dscm

45.77 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.451 lb/ton

9.85E-3 lb/ton = conversion factor for RDF combustors from AP-42, Ch. 2.1, Table 2.1-1

PRRF high historic inorganic condensible stack test result of 9.61 mg/dscm; PM (filterable + all condensible) = 55.38 mg/dscm.

[3] EFs for PM, D/F, Cd, Pb, Hg, HCl, NOx and SO2 from 40 CFR Part 60 Subpart AAAA Table 1 "Emission Limits for New Small Municipal Waste Combustion Units".

[4] CO EF limit from NSPS, Table 2 "Carbon Monoxide Emission Limits for New Small Municipal Waste Combustion Units", Mass burn rotary refractory.

[5] VOC EF from AP-42, 4th Edition Supplement C , Sept 1990, Table 2.1-1 "Emission Factors for Municipal Waste Combustors".

[6] For all EF (lb/ton) the correction factor is based on AP-42 Section 2.1 "Refuse Combustion", Table 2.1-11 "Conversion Factors For Refuse-Derived Fuel Combustors", (Oct 1996).

[7] OWEF - Olmsted Waste to Energy Facility MPCA approved emission factors.

[8] EF for Class II Units from Minn. Rule 7011.1229 Table 2 (60 ug/dscm @ 7% O_2).

[9] State only long-term Mercury limit of 41 µg/dscm @ 7% O_2 based on the Facility's HHRA.

[10] HF EF was obtained from FIRE 6.23, for source code 50100104. No HF EF was available for source code 50100105.

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)

Facility name: Perham Resource Recovery Facility

Unit ID: EQUI 33 Auxiliary Boiler w/FGR and Low-NOx Burners (EU005)

Stack ID: STRU 4 Auxiliary Boiler Stack (SV004)

Pollution Control Equip ID: --

Maximum Rated Capacity: 83.5 MMBtu/hr

Fuel parameters:

Fuel Type	% Sulfur	% Ash	Heat Value	Units	Fuel Consumption Rate Annual Average Basis	Units
Natural Gas	0.20	negligible	1,020	Btu/scf	717.1	MMscf/yr

Average gross heating value of natural gas from AP-42 Section 1.4 "Natural Gas Combustion" and sulfur content from Section 1.4 Table 1.4-2 (July 1998)
% sulfur based on 2000 gr/10^6 scf = 0.20%
(AP-42 Tbl 1.4-2 footnote d, assumes S content of Nat Gas)

Calculations Summary - Fuel: Natural Gas

Pollutant	Emission Factor (lb/MMscf)		Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions	Limited Emissions (tons/yr)
Criteria Pollutants	Uncontrolled	Controlled			
PM	7.6	-	0.62	2.73	2.73
PM_{10}	7.6	-	0.62	2.73	2.73
$PM_{2.5}$	7.6	-	0.62	2.73	2.73
SO_2	0.6	-	4.91E-02	0.22	0.22
NO_x	100	32	8.19	35.86	11.47
VOC	5.5	-	0.45	1.97	1.97
CO	84	-	6.88	30.12	30.12
Lead	0.0005	-	4.09E-05	1.79E-04	1.79E-04
GHG (Fossil Fuels)	(lb/MMBtu)				
CO_2	116.98		9,768	42,782	42,782
CH_4	2.20E-03		1.84E-01	8.06E-01	8.06E-01
N_2O	2.20E-04		1.84E-02	8.06E-02	8.06E-02
CO_2e	-		9,777.53	42,825.60	42,825.60
HAPs	(lb/MMscf)				
Arsenic	2.00E-04		1.64E-05	7.17E-05	7.17E-05
Benzene	2.10E-03		1.72E-04	7.53E-04	7.53E-04
Beryllium	1.20E-05		9.82E-07	4.30E-06	4.30E-06
Cadmium	1.10E-03		9.00E-05	3.94E-04	3.94E-04
Chromium	1.40E-03		1.15E-04	5.02E-04	5.02E-04
Cobalt	8.40E-05		6.88E-06	3.01E-05	3.01E-05
Dichlorobenzene	1.20E-03		9.82E-05	4.30E-04	4.30E-04
Formaldehyde	7.50E-02		6.14E-03	2.69E-02	2.69E-02
Hexane	1.80E+00		1.47E-01	6.45E-01	6.45E-01
Manganese	3.80E-04		3.11E-05	1.36E-04	1.36E-04
Mercury	2.60E-04		2.13E-05	9.32E-05	9.32E-05
Naphthalene	6.10E-04		4.99E-05	2.19E-04	2.19E-04
Nickel	2.10E-03		1.72E-04	7.53E-04	7.53E-04
POM [2]	8.82E-05		7.22E-06	3.16E-05	3.16E-05
Selenium	2.40E-05		1.96E-06	8.61E-06	8.61E-06
Toluene	3.40E-03		2.78E-04	1.22E-03	1.22E-03
Total HAPs	-		0.15	0.68	0.68

EFs from AP-42 Section 1.4 "Natural Gas Combustion", for Boilers < 100 MMBtu/hr, controlled - Low NQ burners/flue gas recirculation (July 1998). Total POM emission factor is equal to the sum of the individual POM compounds except napthalene. Dichlorobenzene (25321-22-6) listed in AP-42 is not a HAP but is represented by the HAP isomer 1,4-Dichlorobenzene (106-46-7). GHG EF based on 40 CFR Part 98 (GHG Mandatory Reporting Rule), Subpart C for combustion sources. CO_2e calculated based on Global Warming Potential (GWP) as follows:

	GWP	EF (kg/MMBtu)	EF (lb/MMBtu)
CO_2	1	53.06	116.98
CH_4	28	1.00E-03	2.20E-03
N_2O	265	1.00E-04	2.20E-04
CO_2e	--	--	--

Conversion factor: *2.2046 lb/kg*

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)

Facility name: Perham Resource Recovery Facility

Unit ID: FUGI 1 Fugitive Dust Emissions from On-Site Traffice/Paved Roads (FS002)

Particulate Emissions from Dust re-entrainment from On-Site Paved Roadways:

Emission Factor: $E = [k * (sL)^{0.91} * (W)^{1.02}] * (1-P/4N)$

Where:

E = Emission factor (lb/VMT, vehicle miles traveled) from AP-42, Section 13.2.1, Equation 2, (1/11).

k = Particle size multiplier (lb/VMT) from AP-42, Table 13.2.1-1.

sL = Road surface silt loading (g/m^2) value from the MPCA Standardized Mobile Sources (SMS) Spreadsheet [version 09097], Paved Roads - Stage 3 Guide Tab, IRT5.

W = Mean vehicle weight based on the "fleet" average weight of all vehicles traveling the road.

P = Number of days with at least 0.01 in. of precipitation per year from AP-42, Figure 13.2.1-2 (assuming the worst daily conditions the number of precipitation days will be 0).

N = Number of days per year (365 days).

Calculations Summary: Fugitive Dust from On-Site Paved Roads

Pollutant	Particle Size Multiplier, k (lb/VMT)	Silt Loading, sL[1] (g/m^2)	Mean Vehicle Weight, W (tons)	Precipitation Days, P[1] (days)	Uncontrolled Emission Factor, E (lb/VMT)	Vehicle Miles Traveled (VMT/day)	Potential Emissions		
							Daily (lb/day)	Hourly (lb/hr)	Annual (tpy)
PM	0.011	5	4.44	0	0.218	6.68	1.46	0.06	0.27
PM10	0.0022	5	4.44	0	0.044	6.68	0.29	0.01	0.05
PM2.5	0.00054	5	4.44	0	0.011	6.68	0.07	0.003	0.01

[1] Silt loading and precipitation days are worst case assumptions for short term air dispersion modeling emission rates. These are not intended to reflect annual emission rates.

Traffic Summary for Paved Roads Emission Calculations

Product	2010 Facility (no MRF)		Current Facility (200 tpd)
	Actual	Maximum	Maximum
MSW (tpy)	35,000	42,340	73,000
Ash (tpy)	8,800	10,645	18,354

Weeks/Year:	52
Days/Week:	5
Days/Year:	260

Truck Weight Summary, Based on 2010 actual data

Truck Type	Average Tare (lbs)	Average Gross (lbs)	Average Max. Gross (lbs.)	Average Vehicle Weight (lbs.)
MSW	31,129	47,556	53,492	39,342
Ash (included fines)	36,269	58,832	72,760	47,551
Leachate	16,745	34,596	41,680	25,671
Material Recovery Facility Trucks	27,234	37,343	46,680	32,289
Fines and Non-processibles	36,269	58,832	72,760	47,551
Miscellaneous	8,244	8,691	9,620	8,468
Lime	NA	NA	NA	47,551
Employee Related	NA	NA	3,590	3,590
Delivery Related	NA	NA	8,000	8,000

Current Facility Truck Traffic Summary

Truck Type	Maximum Truck Loads Per Year	Maximum Daily Trips[1,2]	Round Trip Distance (ft)	Daily Distance Traveled (VMT/day)	Average Vehicle Weight x VMT	Mean Vehicle Weight (tons)
MSW[3]	1,829	7.0	288	0.38	15,096	
Ash[4]	305	1.17	576	0.13	6,085	
Leachate[5]	24	0.09	938	1.64E-02	421	
Material Recovery Facility Trucks[6]	157	0.60	496	5.67E-02	1,832	
Fines and Non-processibles[4]	305	1.17	1,175	2.61E-01	12,413	
Miscellaneous[7]	--	--	--	--	--	
Lime	37	0.14	938	2.53E-02	1,202	
Employee Related[9]	33 Employees	33	877	5.48	19,678	
Delivery Related[10]	2 Deliveries/Day	2	877	0.33	2,658	
Total		45.2		**6.68**	59,384	**4.44**

[1] Entry and Exit from the Facility are counted as **one** trip.

[2] Assume 5 days a week with truck traffic (Monday-Friday) for a worst-case scenario although burner operates continuously, therefore 260 days of truck traffic a year.

[3] Assumes all MSW brought to PRRF arrives in 20 ton trucks (80%) and 5 ton trucks (20%).

30,660 tpy of MSW =73,000 Current Facility maximum MSW tpy - 42,340 2010 maximum MSW tpy

2453 additional truck loads = ([30660 additional tpy MSW x (1-80%)]/20 tons MSW/truck) + ([30660 additional tpy MSW x (1-20%)]/5 tons MSW/truck)

[4] Ash and fines and non-proccessible data was provided by the facility April 27, 2026, based on actual operations. . It is assumed that the average vehicle weight a of fines and non-processibles truck is the same as that of a MRF truck.

[5] Leachate truck data was provided by the facility April 27, 2026.

[6] Material Recovery Facility (MRF) Trucks include any truck traffic for the MRF (steel recycling, glass recycling, aluminum recycling, etc.).

[7] The Miscellaneous category has been removed as of April 27, 2026.

[8] The vehicle weight for Lime trucks is unknown, therefore the weight was assumed to be equal to that of an ash truck.

[9] Employee vehicle weight is assumed to be 3,590 pounds based on the EPA report "Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2011", March 2012. The maximum number of daily trips is calculated assuming that all 33 employees are onsite every day of the week.

[10] It is assumed that 2 deliveries occur per day. Delivery vehicle weight is based on MPCA 2008 data.

This unit qualifies as an Insignificant Activity under Minn. R. 7007.1300 Subp. 3(I): <2 tons CO, < 1 ton NOx, SO2, PM/PM10, VOC, and <1000 ton CO_2e

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)

Facility name: Perham Resource Recovery Facility

Unit ID: IA: Lime Storage / Handling

Calculations Summary - Lime Feed System Conveyor Point Emissions:

Pollutant	Lime Usage (lb/hr)	Emission Factor (lb/ton)	Uncontrolled Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Controlled Emission Rate (lbs/hr)	Maximum Controlled Emissions (tons/yr)
PM	600	6.10E-01	0.18	0.80	0.0%	0.18	0.80
PM_{10}	600	6.10E-01	0.18	0.80	0.0%	0.18	0.80
$PM_{2.5}$	600	6.10E-01	0.18	0.80	0.0%	0.18	0.80

The conveyor rate for the lime usage is estimated as a worst case as 300 lb/hr per unit for a total max capacity of 600 lb/hr.

Emission Factors for PM from Lime Manufacturing, Section 11.17, Table 11.17-4, 2/98. PM_{10} and $PM_{2.5}$ not provided; therefore, assumed equal to PM.

This unit qualifies as an Insignificant Activity under Minn. R. 7007.1300 Subp. 3(I): <2 tons CO, < 1 ton NOx, SO2, PM/PM10, VOC, and <1000 ton CO_2e

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)

Facility name: Perham Resource Recovery Facility

Unit ID: IA: Cooling Towers (two towers)

Calculation of Drift Loss:

Circulation Flow Rate	1,842	gpm each	
Drift Loss	0.01%	Percent	Drift loss based on manufacturer information

TDS emitted:	Total Dissolved Solids	500	ppm

TDS concentration obtained from the National Primary Drinking Water Regulations, MCL for Secondary Contaminants (Total Dissolved Solids).

Calculations Summary - Cooling Tower (per Unit):

Pollutant	Uncontrolled Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Maximum Emissions - Total for Both Cooling Towers (lb/hr)	Maximum Emissions - Total for Both Cooling Towers (tons/yr)
PM	0.046	0.20	0.09	0.40
PM_{10}	0.035	0.15	0.07	0.30
$PM_{2.5}$	0.017	0.08	0.03	0.15

Emission calculations are based on Joel Reisman and Gordon Frisbie paper:

"Calculating Realistic PM_{10} Emissions from Cooling Towers", Environmental Progress, Vol. 21, No. 2. (July, 2002).

PM (lb/hr) = Q (gal/min) * D(%) * TDS (lb solid) /1,000,000 (lb water) * 8.34 (lb water/gal) * 60 (min/hr)

PM (ton/yr) = PM (lb/hr)* 8,760 (hr/yr) / 2,000 (lb/ton)

PM_{10} fraction of PM emissions (assumed): 75%

$PM_{2.5}$ fraction of PM_{10} emissions (assumed): 50%

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)

Facility name: Perham Resource Recovery Facility

Unit ID: IA - Natural Gas Space Heaters: 15 total, 4 units rated @ 150,000 Btu/hr and 11 units at 350,000 Btu/hr

Pollution Control Equip ID: --

Maximum Rated Capacity for 1 space heater: 0.35 MMBtu/hr

Fuel parameters:

Fuel Type	% Sulfur	% Ash	Heat Value	Units	Fuel Consumption Rate Annual Average Basis	Units
Natural Gas	0.20	negligible	1,020	Btu/scf	3.0	MMscf/yr

Average gross heating value of natural gas from AP-42 Section 1.4 "Natural Gas Combustion" and sulfur content from Section 1.4 Table 1.4-2 (July 1998).

% sulfur based on 2000 gr/10^6 scf = 0.20%

(AP-42 Tbl 1.4-2 footnote d, assumes S content of Nat Gas)

Calculations Summary - Fuel: Natural Gas

Pollutant	Emission Factor (lb/MMscf)		Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions	Limited Emissions (tons/yr)
Criteria Pollutants	Uncontrolled	Controlled			
PM	7.6	-	0.00	0.01	0.01
PM_{10}	7.6	-	0.00	0.01	0.01
$PM_{2.5}$	7.6	-	0.00	0.01	0.01
SO_2	0.6	-	2.06E-04	0.00	0.00
NO_x	100	32	0.03	0.15	0.05
VOC	5.5	-	0.00	0.01	0.01
CO	84	-	0.03	0.13	0.13
Lead	0.0005	-	1.72E-07	7.51E-07	7.51E-07
GHG (Fossil Fuels)	(lb/MMBtu)				
CO_2	116.98		41	179	179
CH_4	2.20E-03		7.72E-04	3.38E-03	3.38E-03
N_2O	2.20E-04		7.72E-05	3.38E-04	3.38E-04
CO_2e	-		40.98	179.51	179.51
HAPs	(lb/MMscf)				
Arsenic	2.00E-04		6.86E-08	3.01E-07	3.01E-07
Benzene	2.10E-03		7.21E-07	3.16E-06	3.16E-06
Beryllium	1.20E-05		4.12E-09	1.80E-08	1.80E-08
Cadmium	1.10E-03		3.77E-07	1.65E-06	1.65E-06
Chromium	1.40E-03		4.80E-07	2.10E-06	2.10E-06
Cobalt	8.40E-05		2.88E-08	1.26E-07	1.26E-07
Dichlorobenzene	1.20E-03		4.12E-07	1.80E-06	1.80E-06
Formaldehyde	7.50E-02		2.57E-05	1.13E-04	1.13E-04
Hexane	1.80E+00		6.18E-04	2.71E-03	2.71E-03
Manganese	3.80E-04		1.30E-07	5.71E-07	5.71E-07
Mercury	2.60E-04		8.92E-08	3.91E-07	3.91E-07
Naphthalene	6.10E-04		2.09E-07	9.17E-07	9.17E-07
Nickel	2.10E-03		7.21E-07	3.16E-06	3.16E-06
POM [2]	8.82E-05		3.03E-08	1.33E-07	1.33E-07
Selenium	2.40E-05		8.24E-09	3.61E-08	3.61E-08
Toluene	3.40E-03		1.17E-06	5.11E-06	5.11E-06
Total HAPs	-		0.00	0.00	0.00

EFs from AP-42 Section 1.4 "Natural Gas Combustion", for Boilers < 100 MMBtu/hr, controlled - Low NO_x burners/flue gas recirculation (July 1998). Total POM emission factor is equal to the sum of the individual POM compounds except napthalene. Dichlorobenzene (25321-22-6) listed in AP-42 is not a HAP but is represented by the HAP isomer 1,4-Dichlorobenzene (106-46-7). GHG EF based on 40 CFR Part 98 (GHG Mandatory Reporting Rule), Subpart C for combustion sources. CO_2e calculated based on Global Warming Potential (GWP) as follows:

	GWP	EF (kg/MMBtu)	EF (lb/MMBtu)
CO_2	1	53.06	116.98
CH_4	28	1.00E-03	2.20E-03
N_2O	265	1.00E-04	2.20E-04
CO_2e	--	--	--

Conversion factor: 2.2046 lb/kg

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility

Part 70 Permit Reissuance Application - 2017

South Municipal Waste Combustor (MWC) (EQUI35) Potential Emissions - Chronic

AQ Facility ID No.:	11100036	Agency Interest ID No.: 726 (old AQ File Number 116H)
Facility name:	Perham Resource Recovery Facility	
Unit ID:	EQUI35	South MSW Incinerator (EU001)
Stack ID:	STRU5	Combined MWC Stack (SV009)
Pollution Control Equip ID:	TREA4	Fabric Filter - High Temperature, i.e., T>250°F (CE004)
	TREA5	Dry Limestone Injection (CE005)
	TREA6	Activated Carbon Adsorption (CE006)

Maximum Operating Capacity/Fuel Parameters:

Fuel Type	Heat Value (HV) [1]		Maximum Fuel Consumption Rate Annual Average Basis		Fuel Consumption Annual Average Basis: Maximum	Fuel Consumption Annual Average Basis: Units
RDF	4,379	Btu/lb	4.17	ton/hr	100	ton/day

[1] Heat content of RDF from 2012 Solid Waste Composition Study Report

Calculations Summary - Processed MSW Combustion:

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
Criteria Pollutants													
PM (total) - State only limit	--	0.020	gr/dscf	State, See Note 2	See Note 2		0.451	1.88	8.23	0%	1.88	8.23	8.23
PM (filterable) - State only limit	--	0.015	gr/dscf	State, See Note 2	See Note 2		0.338	1.41	6.17	0%	1.41	6.17	6.17
PM_{10}	--	55.4	mg/dscm	Potential Emissions, See Note 2	9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.27	9.96	0%	2.27	9.96	9.96
$PM_{2.5}$	--	55.4	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.27	9.96	0%	2.27	9.96	9.96
SO_2	7446-09-5	30	ppmvd	AAAA, See Note 3	2.09E-02	(lb/ton)/ppmvd	0.628	2.62	11.45	0%	2.62	11.45	11.45
NO_x	10102-44-0	500	ppmvd		1.50E-02	(lb/ton)/ppmvd	7.493	31.22	136.75	0%	31.22	136.75	136.75
VOC	--	0.10	lb/ton	AP-42, See Note 5	0.97	(4379Btu/lb/4,500Btu/lb)	0.097	0.40	1.77	0%	0.40	1.77	1.77
CO	7440-48-4	100	ppm	AAAA, See Note 4	9.15E-03	(lb/ton)/ppmvd	0.915	3.81	16.69	0%	3.81	16.69	16.69
H_2SO_4	7664-93-9	0.16	mg/dscm	Huntington, See Note 9	9.85E-03	(lb/ton)/(mg/dscm)	1.58E-03	6.57E-03	2.88E-02	0%	6.57E-03	2.88E-02	2.88E-02
MWC Acid Gases (SO_2 and HCl)[3]	--	---	---	SO_2 + HCl	---	---	1.00	4.18	18.30	0%	4.18	18.30	18.30

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
HAPS													
Lead	7439-92-1	0.20	mg/dscm	AAAA, See Note 3	9.85E-03	(lb/ton)/(mg/dscm)	1.97E-03	8.21E-03	3.60E-02	0%	8.21E-03	3.60E-02	3.60E-02
Cadmium	7440-43-9	0.020	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	1.97E-04	8.21E-04	3.60E-03	0%	8.21E-04	3.60E-03	3.60E-03
Mercury	7439-97-6	0.080	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	7.88E-04	3.28E-03	1.44E-02	0%	3.28E-03	1.44E-02	1.44E-02
Mercury	7439-97-6	41	ug/dscm	State Only, See Note 12	9.85E-06	(lb/ton)/(ug/dscm)	4.04E-04	1.68E-03	7.37E-03	0%	1.68E-03	7.37E-03	7.37E-03
Mercury	7439-97-6	60	ug/dscm	State, See Note 11	9.85E-06	(lb/ton)/(ug/dscm)	5.91E-04	2.46E-03	1.08E-02	0%	2.46E-03	1.08E-02	1.08E-02
Hydrochloric Acid (HCl)	7647-01-0	25	ppmvd		1.50E-02	(lb/ton)/ppmvd	0.375	1.56	6.84	0%	1.56	6.84	6.84
Hydrogen Fluoride (HF)	7664-39-3	0.32	mg/dscm	Stanislaus, See Note 10	9.85E-03	(lb/ton)/(mg/dscm)	3.11E-03	1.30E-02	5.68E-02	0%	1.30E-02	5.68E-02	5.68E-02
HAPS: Dioxins/Furans													
Total Dioxins/Furans	00-08-0	13	ng/dscm	AAAA, See Note 3	9.85E-09	(lb/ton)/(ng/dscm)	1.28E-07	5.34E-07	2.34E-06	0%	5.34E-07	2.34E-06	2.34E-06
Total OCDF	39001-02-0	0.29	ng/dscm	Stack Test, See Note 7	9.85E-09	(lb/ton)/(ng/dscm)	2.87E-09	1.19E-08	5.23E-08	0%	1.19E-08	5.23E-08	5.23E-08
Total OCDD	3268-87-9	1.71	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.69E-08	7.04E-08	3.08E-07	0%	7.04E-08	3.08E-07	3.08E-07
TCDF, 2,3,7,8-	51207-31-9	1.07	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.05E-08	4.39E-08	1.92E-07	0%	4.39E-08	1.92E-07	1.92E-07
TCDD, 2,3,7,8-	1746-01-6	0.01	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.47E-10	6.13E-10	2.69E-09	0%	6.13E-10	2.69E-09	2.69E-09
PeCDF, 1,2,3,7,8-	57117-41-6	0.11	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.12E-09	4.66E-09	2.04E-08	0%	4.66E-09	2.04E-08	2.04E-08
PeCDF, 2,3,4,6,8-	57117-31-4	0.16	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.54E-09	6.41E-09	2.81E-08	0%	6.41E-09	2.81E-08	2.81E-08
PeCDD, 1,2,3,7,8-	40321-76-4	0.07	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	7.04E-10	2.93E-09	1.29E-08	0%	2.93E-09	1.29E-08	1.29E-08
HxCDF, 1,2,3,4,7,8-	70648-26-9	0.20	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.97E-09	8.22E-09	3.60E-08	0%	8.22E-09	3.60E-08	3.60E-08
HxCDF, 1,2,3,6,7,8-	57117-44-9	0.17	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.65E-09	6.86E-09	3.00E-08	0%	6.86E-09	3.00E-08	3.00E-08
HxCDF, 1,2,3,7,8,9-	72918-21-9	0.08	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	7.90E-10	3.29E-09	1.44E-08	0%	3.29E-09	1.44E-08	1.44E-08
HxCDF, 2,3,4,6,7,8-	60851-34-5	0.17	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.66E-09	6.93E-09	3.04E-08	0%	6.93E-09	3.04E-08	3.04E-08
HxCDD, 1,2,3,4,7,8-	39227-28-6	0.08	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	7.49E-10	3.12E-09	1.37E-08	0%	3.12E-09	1.37E-08	1.37E-08
HxCDD, 1,2,3,6,7,8-	57653-85-7	0.17	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.67E-09	6.97E-09	3.05E-08	0%	6.97E-09	3.05E-08	3.05E-08
HxCDD, 1,2,3,7,8,9-	19408-74-3	0.09	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	8.83E-10	3.68E-09	1.61E-08	0%	3.68E-09	1.61E-08	1.61E-08
HpCDF, 1,2,3,4,6,7,8-	67562-39-4	0.49	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	4.87E-09	2.03E-08	8.90E-08	0%	2.03E-08	8.90E-08	8.90E-08
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	0.09	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	8.62E-10	3.59E-09	1.57E-08	0%	3.59E-09	1.57E-08	1.57E-08
HpCDD, 1,2,3,4,6,7,8-	35822-46-9	1.13	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.12E-08	4.65E-08	2.04E-07	0%	4.65E-08	2.04E-07	2.04E-07

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
HAPS: Individual PAHs													
Acenaphthene	83-32-9	1.59E-01	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	1.57E-06	6.53E-06	2.86E-05	0%	6.53E-06	2.86E-05	2.86E-05
Acenaphthylene	208-96-8	2.74E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.70E-07	1.12E-06	4.92E-06	0%	1.12E-06	4.92E-06	4.92E-06
Anthracene	120-12-7	1.73E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.71E-06	7.11E-06	3.12E-05	0%	7.11E-06	3.12E-05	3.12E-05
Benzo(a)anthracene	56-55-3	3.27E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.22E-08	1.34E-07	5.88E-07	0%	1.34E-07	5.88E-07	5.88E-07
Benzo(a)pyrene	50-32-8	1.86E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.83E-07	7.64E-07	3.35E-06	0%	7.64E-07	3.35E-06	3.35E-06
Benzo(e)pyrene	192-97-2	6.72E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	6.62E-08	2.76E-07	1.21E-06	0%	2.76E-07	1.21E-06	1.21E-06
Benzo(g,h,i)perylene	191-24-2	3.24E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.20E-07	1.33E-06	5.83E-06	0%	1.33E-06	5.83E-06	5.83E-06
Benzo(b)fluoranthene	205-99-2	3.47E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.41E-08	1.42E-07	6.23E-07	0%	1.42E-07	6.23E-07	6.23E-07
Benzo(k)fluoranthene	207-08-9	3.27E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.22E-08	1.34E-07	5.88E-07	0%	1.34E-07	5.88E-07	5.88E-07
bis(2-ethylhexyl)phthalate	117-81-7	9.02E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	8.88E-06	3.70E-05	1.62E-04	0%	3.70E-05	1.62E-04	1.62E-04
Chrysene	218-01-9	5.52E-03	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	5.43E-08	2.26E-07	9.92E-07	0%	2.26E-07	9.92E-07	9.92E-07
Dibenz(a,h)anthracene	53-70-3	3.27E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.22E-08	1.34E-07	5.88E-07	0%	1.34E-07	5.88E-07	5.88E-07
Dibenzofuran	132-64-9	5.81E-02	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	5.72E-07	2.38E-06	1.04E-05	0%	2.38E-06	1.04E-05	1.04E-05
1,4-Dichlorobenzene	106-46-7	2.01E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.98E-06	8.25E-06	3.61E-05	0%	8.25E-06	3.61E-05	3.61E-05
1,2-Dichlorobenzene	95-50-1	3.53E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.48E-06	1.45E-05	6.35E-05	0%	1.45E-05	6.35E-05	6.35E-05
2,4-Dinitrotoluene	121-14-2	2.22E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.19E-06	9.11E-06	3.99E-05	0%	9.11E-06	3.99E-05	3.99E-05
Fluorene	86-73-7	1.23E+00	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	1.22E-05	5.06E-05	2.22E-04	0%	5.06E-05	2.22E-04	2.22E-04
Fluoranthene	206-44-0	4.29E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	4.23E-07	1.76E-06	7.71E-06	0%	1.76E-06	7.71E-06	7.71E-06
Hexachlorobenzene	118-74-1	1.31E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.29E-06	5.38E-06	2.35E-05	0%	5.38E-06	2.35E-05	2.35E-05
Hexachlorobutadiene	87-68-3	1.99E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.96E-06	8.17E-06	3.58E-05	0%	8.17E-06	3.58E-05	3.58E-05
Hexachlorocyclopentadiene	77-47-4	1.84E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.81E-06	7.55E-06	3.31E-05	0%	7.55E-06	3.31E-05	3.31E-05
Hexachloroethane	67-72-1	3.79E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.73E-06	1.56E-05	6.81E-05	0%	1.56E-05	6.81E-05	6.81E-05
Isophorone	78-59-1	9.07E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	8.93E-07	3.72E-06	1.63E-05	0%	3.72E-06	1.63E-05	1.63E-05
Indeno(1,2,3-cd)pyrene	193-39-5	5.77E-03	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	5.68E-08	2.37E-07	1.04E-06	0%	2.37E-07	1.04E-06	1.04E-06
2-Methylnaphthalene	91-57-6	7.14E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	7.03E-05	2.93E-04	1.28E-03	0%	2.93E-04	1.28E-03	1.28E-03
Naphthalene	91-20-3	3.65E+01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.59E-04	1.50E-03	6.56E-03	0%	1.50E-03	6.56E-03	6.56E-03
Nitrobenzene	98-95-3	1.75E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.72E-06	7.18E-06	3.15E-05	0%	7.18E-06	3.15E-05	3.15E-05
N-Nitrosodiphenylamine	86-30-6	1.41E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.39E-06	5.79E-06	2.53E-05	0%	5.79E-06	2.53E-05	2.53E-05
N-Nitroso-di-n-propylamine	621-64-7	1.50E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.47E-05	6.14E-05	2.69E-04	0%	6.14E-05	2.69E-04	2.69E-04
Pentachlorophenol	87-86-5	2.58E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.54E-06	1.06E-05	4.64E-05	0%	1.06E-05	4.64E-05	4.64E-05
Phenanthrene	85-01-8	8.67E-01	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	8.54E-06	3.56E-05	1.56E-04	0%	3.56E-05	1.56E-04	1.56E-04
Phenol	108-95-2	1.02E+01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.00E-04	4.17E-04	1.83E-03	0%	4.17E-04	1.83E-03	1.83E-03
Pyrene	129-00-0	3.11E-02	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	3.06E-07	1.28E-06	5.59E-06	0%	1.28E-06	5.59E-06	5.59E-06
1,2,4-Trichlorobenzene	120-82-1	1.46E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.44E-06	5.99E-06	2.62E-05	0%	5.99E-06	2.62E-05	2.62E-05
2,4,6-Trichlorophenol	88-06-2	2.06E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.03E-06	8.45E-06	3.70E-05	0%	8.45E-06	3.70E-05	3.70E-05
HAPS: Total PAHs							6.06E-04	2.53E-03	1.11E-02		2.53E-03	1.11E-02	1.11E-02

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
Other HAPS													
Acetaldehyde	75-07-0	4.70E+00	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	4.63E-05	1.93E-04	8.45E-04	0%	1.93E-04	8.45E-04	8.45E-04
Acrolein	107-02-8	3.96E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.90E-05	1.63E-04	7.12E-04	0%	1.63E-04	7.12E-04	7.12E-04
Ammonia	7664-41-7	5.30E+00	mg/dscm	Stanislaus, See Note 10	9.85E-03	(lb/ton)/(mg/dscm)	5.22E-02	2.18E-01	9.53E-01	0%	2.18E-01	9.53E-01	9.53E-01
Arsenic	7440-38-2	3.21E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.16E-06	1.32E-05	5.77E-05	0%	1.32E-05	5.77E-05	5.77E-05
Antimony	7440-36-0	3.47E-03	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	3.42E-05	1.43E-04	6.24E-04	0%	1.43E-04	6.24E-04	6.24E-04
Barium	7440-39-3	3.74E-03	mg/dscm	OWEF, See Note 8	9.85E-03	(lb/ton)/(mg/dscm)	3.68E-05	1.53E-04	6.72E-04	0%	1.53E-04	6.72E-04	6.72E-04
Beryllium	7440-41-7	2.75E-01	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	2.70E-06	1.13E-05	4.93E-05	0%	1.13E-05	4.93E-05	4.93E-05
Chromium (total Cr)	7440-47-3	3.05E+00	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	3.00E-05	1.25E-04	5.48E-04	0%	1.25E-04	5.48E-04	5.48E-04
Hexavalent Chromium (Cr VI)	18540-29-9	3.05E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.00E-06	1.25E-05	5.48E-05	0%	1.25E-05	5.48E-05	5.48E-05
Copper	7440-50-8	4.40E-03	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	4.33E-05	1.81E-04	7.91E-04	0%	1.81E-04	7.91E-04	7.91E-04
Cobalt	7440-48-4	1.08E-03	mg/dscm	OWEF, See Note 8	9.85E-03	(lb/ton)/(mg/dscm)	1.06E-05	4.43E-05	1.94E-04	0%	4.43E-05	1.94E-04	1.94E-04
Formaldehyde	50-00-0	1.37E+01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.35E-04	5.62E-04	2.46E-03	0%	5.62E-04	2.46E-03	2.46E-03
Manganese	7439-96-5	7.01E+01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	6.90E-04	2.88E-03	1.26E-02	0%	2.88E-03	1.26E-02	1.26E-02
Nickel	7440-02-0	5.76E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	5.68E-05	2.37E-04	1.04E-03	0%	2.37E-04	1.04E-03	1.04E-03
Phosphorus	7723-14-0	1.65E-01	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	1.63E-03	6.77E-03	2.97E-02	0%	6.77E-03	2.97E-02	2.97E-02
PCB - Total Mass	1336-36-3	4.10E+00	ng/dscm	Stanislaus, See Note 10	9.85E-09	(lb/ton)/(ng/dscm)	4.04E-08	1.68E-07	7.37E-07	0%	1.68E-07	7.37E-07	7.37E-07
Selenium	7784-49-2	7.56E-04	mg/dscm	OWEF, See Note 8	9.85E-03	(lb/ton)/(mg/dscm)	7.45E-06	3.10E-05	1.36E-04	0%	3.10E-05	1.36E-04	1.36E-04
Thallium	7440-28-0	2.46E-04	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	2.42E-06	1.01E-05	4.42E-05	0%	1.01E-05	4.42E-05	4.42E-05
Zinc	7440-66-6	7.29E-02	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	7.18E-04	2.99E-03	1.31E-02	0%	2.99E-03	1.31E-02	1.31E-02
HAP Total							0.44	1.82	7.98		1.82	7.98	7.98

[2] PM (total or filterable) is State only limit for Class II Units from Minn. Rule 7011.1229, Table 2:

0.020 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 45.77 mg/dscm

45.77 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.451 lb/ton

0.015 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 34.33 mg/dscm

34.33 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.338 lb/ton

Potential PM_{10} and $PM_{2.5}$ emissions are based on the State PM (filterable + organic) limit of 0.020 gr/dscf (45.77 mg/dscm) plus the PRRF high historic inorganic condensible stack test result of 9.61 mg/dscm ; PM (filterable + all condensible) = 55.38 mg/dscm.

[3] EFs for D/F, Cd, Pb, Hg, HCl, NOx and SO2 from 40 CFR Part 60 Subpart AAAA Table 1 "Emission Limits for New Small Municipal Waste Combustion Units".

[4] CO EF limit from NSPS, Table 2 "Carbon Monoxide Emission Limits for New Small Municipal Waste Combustion Units", Mass burn rotary refractory.

[5] VOC EF from AP-42, 4th Edition Supplement C , Sept 1990, Table 2.1-1 “Emission Factors for Municipal Waste Combustors”.

[6] For all EF (lb/ton) the correction factor is adjusting for heat content based on AP-42 Section 2.1 "Refuse Combustion", Table 2.1-11 "Conversion Factors For Refuse-Derived Fuel Combustors", (Oct 1996).

NOx (lb/ton) = NOx (ppm) * 1.89 * 10^-2 (from Table 2.1-11 Assuming ideal gas at STP conditions)

[7] EFs based on facility stack test results scaled to NSPS total "dioxins" limit of 13 ng/dscm @ 7% O2 based on 17-Congener UCL fraction of total (other dioxins based on test results average fraction of total) from tests (See South Unit Dioxin Limit).

[8] OWEF - Olmsted Waste to Energy Facility MPCA approved emission factors.

[9] Huntington - Covanta Huntington Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[10] Stanislaus - Covanta Stanislaus Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[11] EF for Class II Units from Minn. Rule 7011.1229 Table 2 (60 ug/dscm @ 7% O_2).

[12] PLMSWA proposes a state only long-term Mercury limit of 41 µg/dscm @ 7% O_2 based on the Facility's HHRA.

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
North Municipal Waste Combustor (MWC) (EQUI36) Potential Emissions - Chronic

AQ Facility ID No.:	11100036	Agency Interest ID No.: 726 (old AQ File Number 116H)
Facility name:	Perham Resource Recovery Facility	
Unit ID:	EQUI36	North MSW Incinerator (EU002)
Stack ID:	STRU5	Combined MWC Stack (SV009)
Pollution Control Equip ID:	TREA1	Fabric Filter - High Temperature, i.e., T>250°F (CE001)
	TREA2	Dry Limestone Injection (CE002)
	TREA3	Activated Carbon Adsorption (CE003)

Maximum Operating Capacity/Fuel Parameters:

Fuel Type	Heat Value (HV) [1]		Maximum Fuel Consumption Rate Annual Average Basis		Fuel Consumption Annual Average Basis	
					Maximum	Units
RDF	4,379	Btu/lb	4.17	ton/hr	100	ton/day

[1] Heat content of RDF from 2012 Solid Waste Composition Study Report

Calculations Summary - Processed MSW Combustion:

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
Criteria Pollutants													
PM (total) - State only limit	--	0.020	gr/dscf	State, See Note 2	See Note 2		0.451	1.88	8.23	0%	1.88	8.23	8.23
PM (filterable)	--	70	mg/dscm	JJJ, See Note 3	9.85E-03	(lb/ton)/(mg/dscm)	0.690	2.87	12.58	0%	2.87	12.58	12.58
PM_{10}	--	55.4	mg/dscm	Potential Emissions, See Note 2	9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.27	9.96	0%	2.27	9.96	9.96
$PM_{2.5}$	--	55.4	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.27	9.96	0%	2.27	9.96	9.96
SO_2	7446-09-5	77	ppmvd	JJJ, See Note 3	2.09E-02	(lb/ton)/ppmvd	1.611	6.71	29.40	0%	6.71	29.40	29.40
NO_x	10102-44-0	500	ppmvd		1.50E-02	(lb/ton)/ppmvd	7.493	31.22	136.75	0%	31.22	136.75	136.75
VOC	--	0.10	lb/ton	AP-42, See Note 5	0.97	(4379Btu/lb/4,500Btu/lb)	0.097	0.40	1.77	0%	0.40	1.77	1.77
CO	7440-48-4	100	ppmvd	JJJ, See Note 4	9.15E-03	(lb/ton)/ppmvd	0.915	3.81	16.69	0%	3.81	16.69	16.69
H_2SO_4	7664-93-9	0.16	mg/dscm	Huntington, See Note 9	9.85E-03	(lb/ton)/(mg/dscm)	1.58E-03	6.57E-03	2.88E-02	0%	6.57E-03	2.88E-02	2.88E-02
MWC Acid Gases (SO_2 and HCl)[3]	--	---	---	SO_2 + HCl	---	---	5.36	22.34	97.84	0%	22.34	97.84	97.84

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
HAPS													
Lead	7439-92-1	1.6	mg/dscm	JJJ, See Note 3	9.85E-03	(lb/ton)/(mg/dscm)	1.58E-02	0.07	0.3	0%	0.07	0.3	0.29
Cadmium	7440-43-9	0.10	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	9.85E-04	4.10E-03	1.80E-02	0%	4.10E-03	1.80E-02	1.80E-02
Mercury	7439-97-6	0.080	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	7.88E-04	3.28E-03	1.44E-02	0%	3.28E-03	1.44E-02	1.44E-02
Mercury	7439-97-6	41	ug/dscm	State Only, See Note 12	9.85E-06	(lb/ton)/(ug/dscm)	4.04E-04	1.68E-03	7.37E-03	0%	1.68E-03	7.37E-03	7.37E-03
Mercury	7439-97-6	60	ug/dscm	State, See Note 11	9.85E-06	(lb/ton)/(ug/dscm)	5.91E-04	2.46E-03	1.08E-02	0%	2.46E-03	1.08E-02	1.08E-02
Hydrochloric Acid (HCl)	7647-01-0	250	ppmvd	JJJ, See Note 3	1.50E-02	(lb/ton)/ppmvd	3.750	15.63	68.4	0%	15.63	68.4	68.44
Hydrogen Fluoride (HF)	7664-39-3	0.32	mg/dscm	Stanislaus, See Note 10	9.85E-03	(lb/ton)/(mg/dscm)	3.11E-03	0.01	0.1	0%	1.30E-02	0.1	5.68E-02
Dioxins/Furans													
Total Dioxins/Furans	00-08-0	125	ng/dscm	JJJ, See Note 3	9.85E-09	(lb/ton)/(ng/dscm)	1.23E-06	5.13E-06	2.25E-05	0%	5.13E-06	2.25E-05	2.25E-05
Total Dioxins/Furans	00-08-0	20	ng/dscm	State Only, See Note 13	9.85E-09	(lb/ton)/(ng/dscm)	1.97E-07	8.21E-07	3.60E-06	0%	8.21E-07	3.60E-06	3.60E-06
Total OCDF	39001-02-0	0.447	ng/dscm	State Only, See Note 13	9.85E-09	(lb/ton)/(ng/dscm)	4.41E-09	1.84E-08	8.04E-08	0%	1.84E-08	8.04E-08	8.04E-08
Total OCDD	3268-87-9	2.638	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	2.60E-08	1.08E-07	4.74E-07	0%	1.08E-07	4.74E-07	4.74E-07
TCDF, 2,3,7,8-	51207-31-9	1.647	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.62E-08	6.76E-08	2.96E-07	0%	6.76E-08	2.96E-07	2.96E-07
TCDD, 2,3,7,8-	1746-01-6	0.023	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	2.26E-10	9.44E-10	4.13E-09	0%	9.44E-10	4.13E-09	4.13E-09
PeCDF, 1,2,3,7,8-	57117-41-6	0.175	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.72E-09	7.17E-09	3.14E-08	0%	7.17E-09	3.14E-08	3.14E-08
PeCDF, 2,3,4,6,8-	57117-31-4	0.240	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	2.37E-09	9.86E-09	4.32E-08	0%	9.86E-09	4.32E-08	4.32E-08
PeCDD, 1,2,3,7,8-	40321-76-4	0.110	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.08E-09	4.51E-09	1.98E-08	0%	4.51E-09	1.98E-08	1.98E-08
HxCDF, 1,2,3,4,7,8-	70648-26-9	0.308	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	3.04E-09	1.26E-08	5.54E-08	0%	1.26E-08	5.54E-08	5.54E-08
HxCDF, 1,2,3,6,7,8-	57117-44-9	0.257	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	2.53E-09	1.05E-08	4.62E-08	0%	1.05E-08	4.62E-08	4.62E-08
HxCDF, 1,2,3,7,8,9-	72918-21-9	0.123	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.22E-09	5.07E-09	2.22E-08	0%	5.07E-09	2.22E-08	2.22E-08
HxCDF, 2,3,4,6,7,8-	60851-34-5	0.260	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	2.56E-09	1.07E-08	4.67E-08	0%	1.07E-08	4.67E-08	4.67E-08
HxCDD, 1,2,3,4,7,8-	39227-28-6	0.117	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.15E-09	4.80E-09	2.10E-08	0%	4.80E-09	2.10E-08	2.10E-08
HxCDD, 1,2,3,6,7,8-	57653-85-7	0.261	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	2.57E-09	1.07E-08	4.70E-08	0%	1.07E-08	4.70E-08	4.70E-08
HxCDD, 1,2,3,7,8,9-	19408-74-3	0.138	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.36E-09	5.66E-09	2.48E-08	0%	5.66E-09	2.48E-08	2.48E-08
HpCDF, 1,2,3,4,6,7,8-	67562-39-4	0.761	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	7.50E-09	3.12E-08	1.37E-07	0%	3.12E-08	1.37E-07	1.37E-07
HpCDF, 1,2,3,4,7,8,9-	55673-89-7	0.135	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.33E-09	5.53E-09	2.42E-08	0%	5.53E-09	2.42E-08	2.42E-08
HpCDD, 1,2,3,4,6,7,8-	35822-46-9	1.742	ng/dscm		9.85E-09	(lb/ton)/(ng/dscm)	1.72E-08	7.15E-08	3.13E-07	0%	7.15E-08	3.13E-07	3.13E-07

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
Individual PAHs													
Acenaphthene	83-32-9	1.59E-01	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	1.57E-06	6.53E-06	2.86E-05	0%	6.53E-06	2.86E-05	2.86E-05
Acenaphthylene	208-96-8	2.74E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.70E-07	1.12E-06	4.92E-06	0%	1.12E-06	4.92E-06	4.92E-06
Anthracene	120-12-7	1.73E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.71E-06	7.11E-06	3.12E-05	0%	7.11E-06	3.12E-05	3.12E-05
Benzo(a)anthracene	56-55-3	3.27E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.22E-08	1.34E-07	5.88E-07	0%	1.34E-07	5.88E-07	5.88E-07
Benzo(a)pyrene	50-32-8	1.86E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.83E-07	7.64E-07	3.35E-06	0%	7.64E-07	3.35E-06	3.35E-06
Benzo(e)pyrene	192-97-2	6.72E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	6.62E-08	2.76E-07	1.21E-06	0%	2.76E-07	1.21E-06	1.21E-06
Benzo(g,h,i)perylene	191-24-2	3.24E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.20E-07	1.33E-06	5.83E-06	0%	1.33E-06	5.83E-06	5.83E-06
Benzo(b)fluoranthene	205-99-2	3.47E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.41E-08	1.42E-07	6.23E-07	0%	1.42E-07	6.23E-07	6.23E-07
Benzo(k)fluoranthene	207-08-9	3.27E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.22E-08	1.34E-07	5.88E-07	0%	1.34E-07	5.88E-07	5.88E-07
bis(2-ethylhexyl)phthalate	117-81-7	9.02E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	8.88E-06	3.70E-05	1.62E-04	0%	3.70E-05	1.62E-04	1.62E-04
Chrysene	218-01-9	5.52E-03	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	5.43E-08	2.26E-07	9.92E-07	0%	2.26E-07	9.92E-07	9.92E-07
Dibenz(a,h)anthracene	53-70-3	3.27E-03	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.22E-08	1.34E-07	5.88E-07	0%	1.34E-07	5.88E-07	5.88E-07
Dibenzofuran	132-64-9	5.81E-02	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	5.72E-07	2.38E-06	1.04E-05	0%	2.38E-06	1.04E-05	1.04E-05
1,4-Dichlorobenzene	106-46-7	2.01E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.98E-06	8.25E-06	3.61E-05	0%	8.25E-06	3.61E-05	3.61E-05
1,2-Dichlorobenzene	95-50-1	3.53E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.48E-06	1.45E-05	6.35E-05	0%	1.45E-05	6.35E-05	6.35E-05
2,4-Dinitrotoluene	121-14-2	2.22E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.19E-06	9.11E-06	3.99E-05	0%	9.11E-06	3.99E-05	3.99E-05
Fluorene	86-73-7	1.23E+00	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	1.22E-05	5.06E-05	2.22E-04	0%	5.06E-05	2.22E-04	2.22E-04
Fluoranthene	206-44-0	4.29E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	4.23E-07	1.76E-06	7.71E-06	0%	1.76E-06	7.71E-06	7.71E-06
Hexachlorobenzene	118-74-1	1.31E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.29E-06	5.38E-06	2.35E-05	0%	5.38E-06	2.35E-05	2.35E-05
Hexachlorobutadiene	87-68-3	1.99E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.96E-06	8.17E-06	3.58E-05	0%	8.17E-06	3.58E-05	3.58E-05
Hexachlorocyclopentadiene	77-47-4	1.84E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.81E-06	7.55E-06	3.31E-05	0%	7.55E-06	3.31E-05	3.31E-05
Hexachloroethane	67-72-1	3.79E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.73E-06	1.56E-05	6.81E-05	0%	1.56E-05	6.81E-05	6.81E-05
Isophorone	78-59-1	9.07E-02	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	8.93E-07	3.72E-06	1.63E-05	0%	3.72E-06	1.63E-05	1.63E-05
Indeno(1,2,3-cd)pyrene	193-39-5	5.77E-03	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	5.68E-08	2.37E-07	1.04E-06	0%	2.37E-07	1.04E-06	1.04E-06
2-Methylnaphthalene	91-57-6	7.14E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	7.03E-05	2.93E-04	1.28E-03	0%	2.93E-04	1.28E-03	1.28E-03
Naphthalene	91-20-3	3.65E+01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.59E-04	1.50E-03	6.56E-03	0%	1.50E-03	6.56E-03	6.56E-03
Nitrobenzene	98-95-3	1.75E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.72E-06	7.18E-06	3.15E-05	0%	7.18E-06	3.15E-05	3.15E-05
N-Nitrosodiphenylamine	86-30-6	1.41E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.39E-06	5.79E-06	2.53E-05	0%	5.79E-06	2.53E-05	2.53E-05
N-Nitroso-di-n-propylamine	621-64-7	1.50E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.47E-05	6.14E-05	2.69E-04	0%	6.14E-05	2.69E-04	2.69E-04
Pentachlorophenol	87-86-5	2.58E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.54E-06	1.06E-05	4.64E-05	0%	1.06E-05	4.64E-05	4.64E-05
Phenanthrene	85-01-8	8.67E-01	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	8.54E-06	3.56E-05	1.56E-04	0%	3.56E-05	1.56E-04	1.56E-04
Phenol	108-95-2	1.02E+01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.00E-04	4.17E-04	1.83E-03	0%	4.17E-04	1.83E-03	1.83E-03
Pyrene	129-00-0	3.11E-02	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	3.06E-07	1.28E-06	5.59E-06	0%	1.28E-06	5.59E-06	5.59E-06
1,2,4-Trichlorobenzene	120-82-1	1.46E-01	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	1.44E-06	5.99E-06	2.62E-05	0%	5.99E-06	2.62E-05	2.62E-05
2,4,6-Trichlorophenol	88-06-2	2.06E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	2.03E-06	8.45E-06	3.70E-05	0%	8.45E-06	3.70E-05	3.70E-05
Total PAHs							6.06E-04	2.53E-03	1.11E-02		2.53E-03	1.11E-02	1.11E-02

								Annual Average (at 100% Capacity)			Annual Average (at 100% Capacity)		
Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [6] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Emission Rate (lbs/hr)	Maximum Uncontrolled Emissions (tons/yr)	Pollution Control Efficiency (%)	Maximum Controlled Emissions (lb/hr)	Maximum Controlled Emissions (tons/yr)	Maximum Controlled/ Limited Emissions (tons/yr)
Other HAPS													
Acetaldehyde	75-07-0	4.70E+00	ug/dscm	OWEF, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	4.63E-05	1.93E-04	8.45E-04	0%	1.93E-04	8.45E-04	8.45E-04
Acrolein	107-02-8	3.96E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.90E-05	1.63E-04	7.12E-04	0%	1.63E-04	7.12E-04	7.12E-04
Ammonia	7664-41-7	5.30E+00	mg/dscm	Stanislaus, See Note 10	9.85E-03	(lb/ton)/(mg/dscm)	5.22E-02	2.18E-01	9.53E-01	0%	2.18E-01	9.53E-01	9.53E-01
Arsenic	7440-38-2	3.21E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.16E-06	1.32E-05	5.77E-05	0%	1.32E-05	5.77E-05	5.77E-05
Antimony	7440-36-0	3.47E-03	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	3.42E-05	1.43E-04	6.24E-04	0%	1.43E-04	6.24E-04	6.24E-04
Barium	7440-39-3	3.74E-03	mg/dscm	OWEF, See Note 8	9.85E-03	(lb/ton)/(mg/dscm)	3.68E-05	1.53E-04	6.72E-04	0%	1.53E-04	6.72E-04	6.72E-04
Beryllium	7440-41-7	2.75E-01	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	2.70E-06	1.13E-05	4.93E-05	0%	1.13E-05	4.93E-05	4.93E-05
Chromium (total Cr)	7440-47-3	3.05E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.00E-05	1.25E-04	5.48E-04	0%	1.25E-04	5.48E-04	5.48E-04
Hexavalent Chromium (Cr VI)	18540-29-9	3.05E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	3.00E-06	1.25E-05	5.48E-05	0%	1.25E-05	5.48E-05	5.48E-05
Copper	7440-50-8	4.40E-03	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	4.33E-05	1.81E-04	7.91E-04	0%	1.81E-04	7.91E-04	7.91E-04
Cobalt	7440-48-4	1.08E-03	mg/dscm	OWEF, See Note 8	9.85E-03	(lb/ton)/(mg/dscm)	1.06E-05	4.43E-05	1.94E-04	0%	4.43E-05	1.94E-04	1.94E-04
Formaldehyde	50-00-0	1.37E+01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	1.35E-04	5.62E-04	2.46E-03	0%	5.62E-04	2.46E-03	2.46E-03
Manganese	7439-96-5	7.01E+01	ug/dscm	Stanislaus, See Note 10	9.85E-06	(lb/ton)/(ug/dscm)	6.90E-04	2.88E-03	1.26E-02	0%	2.88E-03	1.26E-02	1.26E-02
Nickel	7440-02-0	5.76E+00	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	5.68E-05	2.37E-04	1.04E-03	0%	2.37E-04	1.04E-03	1.04E-03
Phosphorus	7723-14-0	1.65E-01	mg/dscm	OWEF, See Note 8	9.85E-03	(lb/ton)/(mg/dscm)	1.63E-03	6.77E-03	2.97E-02	0%	6.77E-03	2.97E-02	2.97E-02
PCB - Total Mass	1336-36-3	4.10E+00	ng/dscm	Stanislaus, See Note 10	9.85E-09	(lb/ton)/(ng/dscm)	4.04E-08	1.68E-07	7.37E-07	0%	1.68E-07	7.37E-07	7.37E-07
Selenium	7784-49-2	7.56E-04	mg/dscm	OWEF, See Note 8	9.85E-03	(lb/ton)/(mg/dscm)	7.45E-06	3.10E-05	1.36E-04	0%	3.10E-05	1.36E-04	1.36E-04
Thallium	7440-28-0	2.46E-04	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	2.42E-06	1.01E-05	4.42E-05	0%	1.01E-05	4.42E-05	4.42E-05
Zinc	7440-66-6	7.29E-02	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	7.18E-04	2.99E-03	1.31E-02	0%	2.99E-03	1.31E-02	1.31E-02
HAP Total							3.83	15.94	69.83		15.94	69.83	69.83

[2] PM (total or filterable) is State only limit for Class C Units from Minn. Rule 7011.1227, Table 1:

0.020 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 45.77 mg/dscm

45.77 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.451 lb/ton

Potential PM_{10} and $PM_{2.5}$ emissions are based on the State PM (filterable + organic) limit of 0.020 gr/dscf (45.77 mg/dscm) plus the PRRF historic inorganic condensible stack test result of 9.61 mg/dscm ; PM (filterable + all condensible) = 55.38 mg/dscm.

[3] EF for D/F, Cd, Pb, Hg, PM, PM_{10}, HCl, NO_x, and SO_2 from 40 CFR 62 Subpart JJJ, Table 4, Federal Plan Requirements for Small Municipal Waste Combustion Units Constructed on or Before August 30, 1999.

[4] CO EF from 40 CFR 62, Subpart JJJ, Table 5 "Carbon Monoxide Emission Limits for Existing Small Municipal Waste Combustion Units", 4-hr block average.

[5] VOC EF from AP-42, 4th Edition Supplement C , Sept 1990, Table 2.1-1 "Emission Factors for Municipal Waste Combustors".

[6] For all EF (lb/ton) the correction factor is adjusting for heat content based on AP-42 Section 2.1 "Refuse Combustion", Table 2.1-11 "Conversion Factors For Refuse-Derived Fuel Combustors", (Oct 1996).

NOx (lb/ton) = NOx (ppm) * 1.89 * 10^-2 (from Table 2.1-11 Assuming ideal gas at STP conditions)

[7] EFs based on facility stack test results scaled to NSPS total "dioxins" limit of 125 ng/dscm @ 7% O2 based on the 17-Congener UCL fraction of total (other dioxins based on test results average fraction of total) from tests (See North Unit Dioxin Limit).

[8] OWEF - Olmsted Waste to Energy Facility MPCA approved emission factors.

[9] Huntington - Covanta Huntington Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[10] Stanislaus - Covanta Stanislaus Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[11] EF for Class C Units from Minn. Rule 7011.1227 Table 1 (60 ug/dscm @ 7% O2).

[12] PLMSWA proposes a state only long-term Mercury limit of 41 µg/dscm @ 7% O_2 based on the Facility's HHRA.

[13] PLMSWA proposes a state only Dioxin/Furan limit of 20 ng/dscm @ 7% O_2 based on the Facility's HHRA.

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
South Municipal Waste Combustor (MWC) (EQUI35) Potential Emissions - Acute

AQ Facility ID No.:	11100036	Agency Interest ID No.:	726 (old AQ File Number 116H)
Facility name:	Perham Resource Recovery Facility		
Unit ID:	EQUI35	South MSW Incinerator (EU001)	
Stack ID:	STRU5	Combined MWC Stack (SV009)	
Pollution Control Equip ID:	TREA4	Fabric Filter - High Temperature, i.e., T>250°F (CE004)	
	TREA5	Dry Limestone Injection (CE005)	
	TREA6	Activated Carbon Adsorption (CE006)	

Maximum Operating Capacity/Fuel Parameters:

Fuel Type	Heat Value (HV) [1]		Maximum Fuel Consumption Rate Annual Average Basis		Fuel Consumption Annual Average Basis	
					Maximum	Units
RDF	4,379	Btu/lb	4.17	ton/hr	100	ton/day
			Maximum Fuel Consumption Rate Short Term Average Basis (110% Capacity)			
			4.58	ton/hr		

[1] Heat content of RDF from AP-42 Section 2.1 "Refuse Combustion".

Calculations Summary - Processed MSW Combustion:

Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [4] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Short Term Average (at 110% Capacity) Emission Rate (lbs/hr)	Pollution Control Efficiency (%)	Short Term Average (at 110% Capacity) Maximum Controlled Emissions (lb/hr)
Criteria Pollutants										
PM (filterable) - State only limit	--	0.020	gr/dscf	State, See Note	See Note		0.451	2.07	0%	2.07
PM_{10}	--	55.4	mg/dscm	Potential Emissions, See Note 2	9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.50	0%	2.50
$PM_{2.5}$	--	55.4	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.50	0%	2.50
SO_2	7446-09-5	30	ppmvd	AAAA, See Note 3	2.09E-02	(lb/ton)/ppmvd	0.628	2.88	0%	2.88
NO_x	10102-44-0	500	ppmvd		1.50E-02	(lb/ton)/ppmvd	7.493	34.34	0%	34.34
CO	7440-48-4	100	ppmvd		9.15E-03	(lb/ton)/ppmvd	0.915	4.19	0%	4.19
H_2SO_4	7664-93-9	0.16	mg/dscm	Huntington, See Note 6	9.85E-03	(lb/ton)/(mg/dscm)	0.0016	0.01	0%	0.01
MWC Acid Gases (SO_2 and HCl)[3]	--	---	---	SO_2 + HCl	---	---	1.00	4.60	0%	4.60

Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [4] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Short Term Average (at 110% Capacity) Emission Rate (lbs/hr)	Pollution Control Efficiency (%)	Short Term Average (at 110% Capacity) Maximum Controlled Emissions (lb/hr)
HAPS										
Mercury	7439-97-6	100	ug/dscm	State, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	9.85E-04	4.51E-03	0%	4.51E-03
Hydrochloric Acid (HCl)	7647-01-0	25	ppmvd		1.50E-02	(lb/ton)/ppmvd	0.375	1.72	0%	1.72
Hydrogen Fluoride (HF)	7664-39-3	0.32	mg/dscm	Stanislaus, See Note 7	9.85E-03	(lb/ton)/(mg/dscm)	3.11E-03	1.43E-02	0%	1.43E-02
Naphthalene	91-20-3	52.28	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	5.15E-04	2.36E-03	0%	2.36E-03
Phenol	108-95-2	13.68	ug/dscm	OWEF, See Note 5	9.85E-06	(lb/ton)/(ug/dscm)	1.35E-04	6.17E-04	0%	6.17E-04
Acetaldehyde	75-07-0	5.73	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	5.64E-05	2.59E-04	0%	2.59E-04
Acrolein	107-02-8	4.523	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	4.46E-05	2.04E-04	0%	2.04E-04
Ammonia	7664-41-7	14.35	mg/dscm	Stanislaus, See Note 7	9.85E-03	(lb/ton)/(mg/dscm)	1.41E-01	6.48E-01	0%	6.48E-01
Arsenic	7440-38-2	6.82E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	6.72E-06	3.08E-05	0%	3.08E-05
Copper	7440-50-8	6.87E-03	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	6.77E-05	3.10E-04	0%	3.10E-04
Formaldehyde	50-00-0	15.07	ug/dscm	OWEF, See Note 5	9.85E-06	(lb/ton)/(ug/dscm)	1.48E-04	6.80E-04	0%	6.80E-04
Nickel	7440-02-0	16.20	ug/dscm	Stanislaus, See Note 7	9.85E-06	(lb/ton)/(ug/dscm)	1.60E-04	7.31E-04	0%	7.31E-04

[2] PM (total or filterable) is State only limit for Class II Units from Minn. Rule 7011.1229, Table 2:

0.020 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 45.77 mg/dscm

45.77 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.451 lb/ton

Potential PM_{10} and $PM_{2.5}$ emissions are based on the State PM (filterable + organic) limit of 0.020 gr/dscf (45.77 mg/dscm) plus the PRRF high historic inorganic condensable stack test result of 9.61 mg/dscm; PM (filterable + all condensable) = 55.38 mg/dscm.

[3] EFs from 40 CFR Part 60 Subpart JJJ Table 1 "Emission Limits for New Small Municipal Waste Combustion Units".

[4] For all EF (lb/ton) the correction factor is adjusting for heat content based on AP-42 Section 2.1 "Refuse Combustion", Table 2.1-10 "Conversion Factors For All Combustors Except RDF", (Oct 1996).

NOx (lb/ton) = NOx (ppm) * 1.54 * 10^-2 (from Table 2.1-10 Assuming ideal gas at STP conditions) @ 4,500 Btu/lb

NOx (lb/ton) @ 5,500 But/lb = NOx (lb/ton) * 5,500 Btu/lb / 4,500 Btu/lb = 1.54 * 10^-2 *5,500/4,500 = 1.88 * 10^2

[5] OWEF - Olmsted Waste to Energy Facility MPCA approved emission factors.

[6] Huntington - Covanta Huntington Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[7] Stanislaus - Covanta Stanislaus Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[8] EF for Class II Units from Minn. Rule 7011.1229 Table 2 (100 ug/dscm @ 7% O_2).

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
North Municipal Waste Combustor (MWC) (EQUI36) Potential Emissions - Acute

AQ Facility ID No.:	11100036	Agency Interest ID No.:	726 (old AQ File Number 116H)
Facility name:	Perham Resource Recovery Facility		
Unit ID:	EQUI36	North MSW Incinerator (EU002)	
Stack ID:	STRU5	Combined MWC Stack (SV009)	
Pollution Control Equip ID:	TREA1	Fabric Filter - High Temperature, i.e., T>250°F (CE001)	
	TREA2	Dry Limestone Injection (CE002)	
	TREA3	Activated Carbon Adsorption (CE003)	

Maximum Operating Capacity/Fuel Parameters:

Fuel Type	Heat Value (HV) [1]		Maximum Fuel Consumption Rate Annual Average Basis		Fuel Consumption Annual Average Basis	
					Maximum	Units
RDF	4,379	Btu/lb	4.17	ton/hr	100	ton/day

Maximum Fuel Consumption Rate Short Term Average Basis (110% Capacity)	
4.58	ton/hr

[1] Heat content of RDF from AP-42 Section 2.1 "Refuse Combustion".

Calculations Summary - Processed MSW Combustion:

Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [4] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Short Term Average (at 110% Capacity) Emission Rate (lbs/hr)	Pollution Control Efficiency (%)	Short Term Average (at 110% Capacity) Maximum Controlled Emissions (lb/hr)
Criteria Pollutants										
PM (filterable) - State only limit	--	0.020	gr/dscf	State, See Note 2	See Note 2		0.451	2.07	0%	2.07
PM_{10}	--	55.4	mg/dscm	Potential Emissions, See Note 2	9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.50	0%	2.50
$PM_{2.5}$	--	55.4	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	0.545	2.50	0%	2.50
SO_2	7446-09-5	77	ppmvd	JJJ, See Note 3	2.09E-02	(lb/ton)/ppmvd	1.611	7.38	0%	7.38
NO_x	10102-44-0	500	ppmvd		1.50E-02	(lb/ton)/ppmvd	7.493	34.34	0%	34.34
CO	7440-48-4	100	ppmvd		9.15E-03	(lb/ton)/ppmvd	0.915	4.19	0%	4.19
H_2SO_4	7664-93-9	0.16	mg/dscm	Huntington, See Note 6	9.85E-03	(lb/ton)/(mg/dscm)	0.0016	0.01	0%	0.01
MWC Acid Gases (SO_2 and HCl)[3]	--	---	---	SO_2 + HCl	---	---	5.36	24.57	0%	24.57

Pollutant	CAS No.	Emission Limit or Factor (EF)	Units (@ 7% O_2)	Emission Factor Source	Conversion Factor [4] (4379 Btu/lb basis)		Emission Factor (lb/ton)	Short Term Average (at 110% Capacity) Emission Rate (lbs/hr)	Pollution Control Efficiency (%)	Short Term Average (at 110% Capacity) Maximum Controlled Emissions (lb/hr)
HAPS										
Mercury	7439-97-6	100	ug/dscm	State, See Note 8	9.85E-06	(lb/ton)/(ug/dscm)	9.85E-04	4.51E-03	0%	4.51E-03
Hydrochloric Acid (HCl)	7647-01-0	250	ppmvd	JJJ, See Note 3	1.50E-02	(lb/ton)/ppmvd	3.750	17.19	0%	17.19
Hydrogen Fluoride (HF)	7664-39-3	0.32	mg/dscm	Stanislaus, See Note 7	9.85E-03	(lb/ton)/(mg/dscm)	3.11E-03	1.43E-02	0%	1.43E-02
Naphthalene	91-20-3	52.28	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	5.15E-04	2.36E-03	0%	2.36E-03
Phenol	108-95-2	13.68	ug/dscm	OWEF, See Note 5	9.85E-06	(lb/ton)/(ug/dscm)	1.35E-04	6.17E-04	0%	6.17E-04
Acetaldehyde	75-07-0	5.73	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	5.64E-05	2.59E-04	0%	2.59E-04
Acrolein	107-02-8	4.523	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	4.46E-05	2.04E-04	0%	2.04E-04
Ammonia	7664-41-7	14.35	mg/dscm	Stanislaus, See Note 7	9.85E-03	(lb/ton)/(mg/dscm)	1.41E-01	6.48E-01	0%	6.48E-01
Arsenic	7440-38-2	6.82E-01	ug/dscm		9.85E-06	(lb/ton)/(ug/dscm)	6.72E-06	3.08E-05	0%	3.08E-05
Copper	7440-50-8	6.87E-03	mg/dscm		9.85E-03	(lb/ton)/(mg/dscm)	6.77E-05	3.10E-04	0%	3.10E-04
Formaldehyde	50-00-0	15.07	ug/dscm	OWEF, See Note 5	9.85E-06	(lb/ton)/(ug/dscm)	1.48E-04	6.80E-04	0%	6.80E-04
Nickel	7440-02-0	16.20	ug/dscm	Stanislaus, See Note 7	9.85E-06	(lb/ton)/(ug/dscm)	1.60E-04	7.31E-04	0%	7.31E-04

[2] PM (total or filterable) is State only limit for Class II Units from Minn. Rule 7011.1229, Table 2:

0.020 gr/dscf * lb/7,000 gr * 453,593 mg/lb * 35.3145 dscf/dscm = 45.77 mg/dscm

45.77 mg/dscm * 9.85E-3 (lb/ton)/(mg/dscm) = 0.451 lb/ton

Potential PM_{10} and $PM_{2.5}$ emissions are based on the State PM (filterable + organic) limit of 0.020 gr/dscf (45.77 mg/dscm) plus the PRRF high historic inorganic condensable stack test result of 9.61 mg/dscm; PM (filterable + all condensable) = 55.38 mg/dscm.

[3] EFs from 40 CFR Part 60 Subpart JJJ Table 1 "Emission Limits for New Small Municipal Waste Combustion Units".

[4] For all EF (lb/ton) the correction factor is adjusting for heat content based on AP-42 Section 2.1 "Refuse Combustion", Table 2.1-10 "Conversion Factors For All Combustors Except RDF", (Oct 1996).

NOx (lb/ton) = NOx (ppm) * 1.54 * 10^-2 (from Table 2.1-10 Assuming ideal gas at STP conditions) @ 4,500 Btu/lb

NOx (lb/ton) @ 5,500 But/lb = NOx (lb/ton) * 5,500 Btu/lb / 4,500 Btu/lb = 1.54 * 10^-2 *5,500/4,500 = 1.88 * 10^2

[5] OWEF - Olmsted Waste to Energy Facility MPCA approved emission factors.

[6] Huntington - Covanta Huntington Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[7] Stanislaus - Covanta Stanislaus Resource Recovery Facility, MPCA approved emission factors from 2007-2009 test data.

[8] EF for Class C Units from Minn. Rule 7011.1227 Table 1 (100 ug/dscm @ 7% O2).

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
South and North MWCs Potential Emissions Summary

AQ Facility ID No.:	11100036	Agency Interest ID No.:	726 (old AQ File Number 116H)
Facility name:	Perham Resource Recovery Facility		
Unit ID:	EQU36 North MSW Incinerator (EU002)	EQU35	South MSW Incinerator (EU001)
Stack ID:	STRU5 Combined MWC Stack (SV009)	STRU5	Combined MWC Stack (SV009)
Pollution Control Equip ID:	TREA1 Fabric filter - High Temperature, i.e., T>250°F (CE001)	TREA4	Fabric filter - High Temperature, i.e., T>250°F (CE004)
	TREA2 Dry Limestone Injection (CE002)	TREA5	Dry Limestone Injection (CE005)
	TREA3 Activated Carbon Adsorption (CE003)	TREA6	Activated Carbon Adsorption (CE006)

100 % Capacity	North Unit	South Unit	
Maximum Fuel Consumption Rate Annual Average	4.17	4.17	ton/hr
Basis (@ 4,379 Btu/lb)	100	100	ton/day

Pollutant	CAS Number	Chronic Annual Average at 100% Capacity						Acute Short Term at 110% Capacity			
		Emission Rate				Emissions		Emission Rate			
		(lb/hr)		(g/s)		(tpy)		(lb/hr)		(g/s)	
		EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002
PM (total) - State only limit		1.88	1.88	0.237	0.237	8.23	8.23				
PM (filterable)		1.41	2.87	0.178	0.362	6.17	12.58	2.066	2.066	0.260	0.260
PM_{10}		2.27	2.27	0.286	0.286	9.96	9.96	2.500	2.500	0.315	0.315
$PM_{2.5}$		2.27	2.27	0.286	0.286	9.96	9.96	2.500	2.500	0.315	0.315
SO_2	7446-09-5	2.62	6.71	0.330	0.846	11.45	29.40	2.877	7.384	0.362	0.930
NO_x	10102-44-0	31.22	31.22	3.934	3.934	136.75	136.75	34.343	34.343	4.327	4.327
VOC		0.40	0.40	0.051	0.051	1.77	1.77				
CO	7440-48-4	3.81	3.81	0.480	0.480	16.69	16.69				
H_2SO_4	7664-93-9	0.01	0.01	0.001	0.001	0.03	0.03	0.007	0.007	0.001	0.001
MWC Acid Gases (SO_2 and HCl)		4.18	22.34	0.526	2.814	18.30	97.84	4.596	24.571	0.579	3.096
HAPS											
Lead	7439-92-1	8.21E-03	6.57E-02	1.03E-03	8.27E-03	3.60E-02	2.88E-01				
Cadmium	7440-43-9	8.21E-04	4.10E-03	1.03E-04	5.17E-04	3.60E-03	1.80E-02				
Mercury	7439-97-6	3.28E-03	3.28E-03	4.14E-04	4.14E-04	1.44E-02	1.44E-02				
Mercury - State only limit	7439-97-6	2.46E-03	2.46E-03	3.10E-04	3.10E-04	1.08E-02	1.08E-02	4.51E-03	4.51E-03	5.69E-04	5.69E-04
HCl	9004-54-0	1.56E+00	1.56E+01	0.20	1.97	6.84E+00	6.84E+01	1.72	17.19	0.22	2.17
HF	7782-41-4	1.30E-02	1.30E-02	1.63E-03	1.63E-03	5.68E-02	5.68E-02	0.01	1.43E-02	1.80E-03	1.80E-03

Pollutant	CAS Number	Chronic Annual Average at 100% Capacity						Acute Short Term at 110% Capacity			
		Emission Rate				Emissions		Emission Rate			
		(lb/hr)		(g/s)		(tpy)		(lb/hr)		(g/s)	
		EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002
Dioxins/Furans											
Total Dioxins/Furans		5.34E-07	8.21E-07	6.72E-08	1.03E-07	2.34E-06	3.60E-06				
Total OCDF		1.19E-08	1.84E-08	1.50E-09	2.31E-09	5.23E-08	8.04E-08				
Total OCDD		7.04E-08	1.08E-07	8.87E-09	1.36E-08	3.08E-07	4.74E-07				
TCDF, 2,3,7,8-		4.39E-08	6.76E-08	5.53E-09	8.51E-09	1.92E-07	2.96E-07				
TCDD, 2,3,7,8-		6.13E-10	9.44E-10	7.73E-11	1.19E-10	2.69E-09	4.13E-09				
PeCDF, 1,2,3,7,8-		4.66E-09	7.17E-09	5.87E-10	9.03E-10	2.04E-08	3.14E-08				
PeCDF, 2,3,4,6,8-		6.41E-09	9.86E-09	8.08E-10	1.24E-09	2.81E-08	4.32E-08				
PeCDD, 1,2,3,7,8-		2.93E-09	4.51E-09	3.70E-10	5.69E-10	1.29E-08	1.98E-08				
HxCDF, 1,2,3,4,7,8-		8.22E-09	1.26E-08	1.04E-09	1.59E-09	3.60E-08	5.54E-08				
HxCDF, 1,2,3,6,7,8-		6.86E-09	1.05E-08	8.64E-10	1.33E-09	3.00E-08	4.62E-08				
HxCDF, 1,2,3,7,8,9-		3.29E-09	5.07E-09	4.15E-10	6.38E-10	1.44E-08	2.22E-08				
HxCDF, 2,3,4,6,7,8-		6.93E-09	1.07E-08	8.73E-10	1.34E-09	3.04E-08	4.67E-08				
HxCDD, 1,2,3,4,7,8-		3.12E-09	4.80E-09	3.93E-10	6.05E-10	1.37E-08	2.10E-08				
HxCDD, 1,2,3,6,7,8-		6.97E-09	1.07E-08	8.78E-10	1.35E-09	3.05E-08	4.70E-08				
HxCDD, 1,2,3,7,8,9-		3.68E-09	5.66E-09	4.64E-10	7.13E-10	1.61E-08	2.48E-08				
HpCDF, 1,2,3,4,6,7,8-		2.03E-08	3.12E-08	2.56E-09	3.94E-09	8.90E-08	1.37E-07				
HpCDF, 1,2,3,4,7,8,9-		3.59E-09	5.53E-09	4.53E-10	6.96E-10	1.57E-08	2.42E-08				
HpCDD, 1,2,3,4,6,7,8-		4.65E-08	7.15E-08	5.86E-09	9.01E-09	2.04E-07	3.13E-07				

Pollutant	CAS Number	Chronic Annual Average at 100% Capacity						Acute Short Term at 110% Capacity			
		Emission Rate				Emissions		Emission Rate			
		(lb/hr)		(g/s)		(tpy)		(lb/hr)		(g/s)	
		EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002
Individual PAHs											
Acenaphthene	83-32-9	6.53E-06	6.53E-06	8.23E-07	8.23E-07	2.86E-05	2.86E-05				
Acenaphthylene	208-96-8	1.12E-06	1.12E-06	1.42E-07	1.42E-07	4.92E-06	4.92E-06				
Anthracene	120-12-7	7.11E-06	7.11E-06	8.96E-07	8.96E-07	3.12E-05	3.12E-05				
Benzo (a) anthracene	56-55-3	1.34E-07	1.34E-07	1.69E-08	1.69E-08	5.88E-07	5.88E-07				
Benzo (a) pyrene	50-32-8	7.64E-07	7.64E-07	9.63E-08	9.63E-08	3.35E-06	3.35E-06				
Benzo (e) pyrene	192-97-2	2.76E-07	2.76E-07	3.48E-08	3.48E-08	1.21E-06	1.21E-06				
Benzo(g,h,i)perylene	191-24-2	1.13E-06	1.13E-06	1.68E-07	1.68E-07	5.83E-06	5.83E-06				
Benzo (b) fluoranthene	205-99-2	1.42E-07	1.42E-07	1.79E-08	1.79E-08	6.23E-07	6.23E-07				
Benzo (k) fluoranthene	207-08-9	1.34E-07	1.34E-07	1.69E-08	1.69E-08	5.88E-07	5.88E-07				
bis (2 -Ethylhexyl) phthalate	117-81-7	3.70E-05	3.70E-05	4.66E-06	4.66E-06	1.62E-04	1.62E-04				
Chrysene	218-01-9	2.26E-07	2.26E-07	2.85E-08	2.85E-08	9.92E-07	9.92E-07				
Dibenz (a,h) anthracene	53-70-3	1.34E-07	1.34E-07	1.69E-08	1.69E-08	5.88E-07	5.88E-07				
Dibenzofuran	132-64-9	2.38E-06	2.38E-06	3.00E-07	3.00E-07	1.04E-05	1.04E-05				
1,4 - Dichlorobenzene	106-46-7	8.25E-06	8.25E-06	1.04E-06	1.04E-06	3.61E-05	3.61E-05				
1,2 - Dichlorobenzene	95-50-1	1.45E-05	1.45E-05	1.83E-06	1.83E-06	6.35E-05	6.35E-05				
2,4 - Dinitrotoluene	121-14-2	9.11E-06	9.11E-06	1.15E-06	1.15E-06	3.99E-05	3.99E-05				

Pollutant	CAS Number	Chronic Annual Average at 100% Capacity						Acute Short Term at 110% Capacity			
		Emission Rate				Emissions		Emission Rate			
		(lb/hr)		(g/s)		(tpy)		(lb/hr)		(g/s)	
		EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002
Individual PAHs											
Fluorene	86-73-7	5.06E-05	5.06E-05	6.38E-06	6.38E-06	2.22E-04	2.22E-04				
Fluoranthene	206-44-0	1.76E-06	1.76E-06	2.22E-07	2.22E-07	7.71E-06	7.71E-06				
Hexachlorobenzene	118-74-1	5.38E-06	5.38E-06	6.77E-07	6.77E-07	2.35E-05	2.35E-05				
Hexachlorobutadiene	87-68-3	8.17E-06	8.17E-06	1.03E-06	1.03E-06	3.58E-05	3.58E-05				
Hexachlorocyclopentadiene	77-47-4	7.55E-06	7.55E-06	9.51E-07	9.51E-07	3.31E-05	3.31E-05				
Hexachloroethane	67-72-1	1.56E-05	1.56E-05	1.96E-06	1.96E-06	6.81E-05	6.81E-05				
Isophorone	78-59-1	3.72E-06	3.72E-06	4.69E-07	4.69E-07	1.63E-05	1.63E-05				
Indeno (1,2,3 -cd) pyrene	193-39-5	2.37E-07	2.37E-07	2.98E-08	2.98E-08	1.04E-06	1.04E-06				
2-MethylNaphthalene	91-57-6	2.93E-04	2.93E-04	3.69E-05	3.69E-05	1.28E-03	1.28E-03				
Napthalene	91-20-3	1.50E-03	1.50E-03	1.89E-04	1.89E-04	6.56E-03	6.56E-03				
Nitrobenzene	98-95-3	7.18E-06	7.18E-06	9.05E-07	9.05E-07	3.15E-05	3.15E-05				
N-Nitrosodiphenylamine	86-30-6	5.79E-06	5.79E-06	7.29E-07	7.29E-07	2.53E-05	2.53E-05				
N-Nitroso-di-n-propylamine	621-64-7	6.14E-05	6.14E-05	7.74E-06	7.74E-06	2.69E-04	2.69E-04				
Pentachlorophenol	87-86-5	1.06E-05	1.06E-05	1.33E-06	1.33E-06	4.64E-05	4.64E-05				
Phenanthrene	85-01-8	3.56E-05	3.56E-05	4.49E-06	4.49E-06	1.56E-04	1.56E-04				
Phenol	108-95-2	4.17E-04	4.17E-04	5.25E-05	5.25E-05	1.83E-03	1.83E-03				
Pyrene	129-00-0	1.28E-06	1.28E-06	1.61E-07	1.61E-07	5.59E-06	5.59E-06				
1,2,4 - Trichlorobenzene	120-82-1	5.99E-06	5.99E-06	7.55E-07	7.55E-07	2.62E-05	2.62E-05				
2,4,6 - Trichlorophenol	88-06-2	8.45E-06	8.45E-06	1.07E-06	1.07E-06	3.70E-05	3.70E-05				
Total PAHs		2.53E-03	2.53E-03	3.18E-04	3.18E-04	1.11E-02	1.11E-02				

Pollutant	CAS Number	Chronic Annual Average at 100% Capacity						Acute Short Term at 110% Capacity			
		Emission Rate				Emissions		Emission Rate			
		(lb/hr)		(g/s)		(tpy)		(lb/hr)		(g/s)	
		EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002	EU001	EU002
Other HAPs											
Acetaldehyde	75-07-0	1.93E-04	1.93E-04	2.43E-05	2.43E-05	8.45E-04	8.45E-04	2.59E-04	2.59E-04	3.26E-05	3.26E-05
Acrolein	107-02-8	1.63E-04	1.63E-04	2.05E-05	2.05E-05	7.12E-04	7.12E-04				
Ammonia	7664-41-7	2.18E-01	2.18E-01	2.74E-02	2.74E-02	9.53E-01	9.53E-01	6.48E-01	6.48E-01	8.16E-02	8.16E-02
Arsenic	7440-38-2	1.32E-05	1.32E-05	1.66E-06	1.66E-06	5.77E-05	5.77E-05	3.08E-05	3.08E-05	3.88E-06	3.88E-06
Antimony	7440-36-0	1.43E-04	1.43E-04	1.80E-05	1.80E-05	6.24E-04	6.24E-04				
Barium	7440-39-3	1.53E-04	1.53E-04	1.93E-05	1.93E-05	6.72E-04	6.72E-04				
Beryllium	7440-41-7	1.13E-05	1.13E-05	1.42E-06	1.42E-06	4.93E-05	4.93E-05				
Total Chromium (Cr)	7440-47-3	1.25E-04	1.25E-04	1.58E-05	1.58E-05	5.48E-04	5.48E-04				
Hexavalent Chromium	18540-29-9	1.25E-05	1.25E-05	1.58E-06	1.58E-06	5.48E-05	5.48E-05				
Copper	7440-50-8	1.81E-04	1.81E-04	2.27E-05	2.27E-05	7.91E-04	7.91E-04	3.10E-04	3.10E-04	3.91E-05	3.91E-05
Cobalt	7440-48-4	4.43E-05	4.43E-05	5.58E-06	5.58E-06	1.94E-04	1.94E-04				
Formaldehyde	50-00-0	5.62E-04	5.62E-04	7.08E-05	7.08E-05	2.46E-03	2.46E-03	6.80E-04	6.80E-04	8.57E-05	8.57E-05
Manganese	7439-96-5	2.88E-03	2.88E-03	3.62E-04	3.62E-04	1.26E-02	1.26E-02				
Nickel	7440-02-0	2.37E-04	2.37E-04	2.98E-05	2.98E-05	1.04E-03	1.04E-03	7.31E-04	7.31E-04	9.21E-05	9.21E-05
Phosphorus	7723-14-0	6.77E-03	6.77E-03	8.53E-04	8.53E-04	2.97E-02	2.97E-02				
PCB - Total Mass	1336-36-3	1.68E-07	1.68E-07	2.12E-08	2.12E-08	7.37E-07	7.37E-07				
Selenium	7784-49-2	3.10E-05	3.10E-05	3.91E-06	3.91E-06	1.36E-04	1.36E-04				
Thallium	82870-81-3	1.01E-05	1.01E-05	1.27E-06	1.27E-06	4.42E-05	4.42E-05				
Zinc	7440-66-6	2.99E-03	2.99E-03	3.77E-04	3.77E-04	1.31E-02	1.31E-02				
	HAP Total	**1.82**	**15.95**	**0.23**	**2.01**	**7.98**	**69.84**				

* Dioxin congeners, hexavalent chromium and Mercury are not double counted in HAP Total.

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
North and South MWC Greenhouse Gas Emissions

AQ Facility ID No.:	11100036	Agency Interest ID No.:	726 (old AQ File Number 116H)	
Facility name:	Perham Resource Recovery Facility			
Unit ID:	EQUI35	South MSW Incinerator (EU001)	EQUI36	North MSW Incinerator (EU002)
Stack ID:	STRU5	Combined MWC Stack (SV009)	STRU5	Combined MWC Stack (SV009)
Pollution Control Equip ID:	TREA4-6		TREA1-3	

Maximum Operating Capacity/Fuel Parameters:

Fuel Type	Heat Value		Maximum Fuel Consumption Rate Annual Average Basis		Fuel Consumption Annual Average Basis		Fuel Consumption Rate	
MSW	4,379	Btu/lb	4.17	ton/hr	100	ton/day	46	MMBtu/hr

Calculations Summary - Processed MSW Combustion:

NOTE: RDF emission factors were chosen because the waste combusted is processed within the Materials Recovery Facility (MRF) with the post-MRF waste stream being closer to RDF composition than MSW composition.

GHG Pollutant	Emission Factor	Uncontrolled Emission Rate		Pollution Control Efficiency	Controlled Emission Rate		Limited and Controlled Emission Rate	
	(lb/MMbtu)[1]	(lb/hr)	(tpy)	(%)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Fossil Fuel Only								
CO_2 (mass) (Fossil Fuel Only)	88.95	4,080	17,871	0.0%	4,080	17,871	4,080	17,871
CH_4 (mass) (Fossil Fuel Only)	7.05E-02	3.24	14.17	0.0%	3.24	14.17	3.24	14.17
N_2O (mass) (Fossil Fuel Only)	9.26E-03	0.42	1.86	0.0%	0.42	1.86	0.42	1.86
CO_2e (Fossil Fuel Only)	93.47	4,288	18,780	0.0%	4,288	18,780	4,288	18,780
Biogenic Only								
CO_2 (mass) (Biogenic Only)	118.60	5,440	23,828	0.0%	5,440	23,828	5,440	23,828
CH_4 (mass) (Biogenic Only)	NA	--	--	--	--	--	--	--
N_2O (mass) (Biogenic Only)	NA	--	--	--	--	--	--	--
CO_2e (Biogenic Only)	118.60	5,440	23,828	0.0%	5,440	23,828	5,440	23,828
Total - Fossil Fuel and Biogenic								
CO_2 (mass) (Fossil Fuel and Biogenic)	208	9,520	41,699	--	9,520	41,699	9,520	41,699
CH_4 (mass) (Fossil Fuel and Biogenic)	7.05E-02	3.24	14	--	3.24	14	3.24	14
N_2O (mass) (Fossil Fuel and Biogenic)	9.26E-03	0.42	2	--	0.42	2	0.42	2
CO_2e (Fossil Fuel and Biogenic)	212	9,728	42,608	--	9,728	42,608	9,728	42,608

Biogenic Sources include Stationary Combustion for the MSW Incinerators. Biogenic is only applicable to CO_2 (N_2O and CH_4 are not biogenic in origin).

CO_2 EFs (biogenic and fossil fuel) from General Guidance for Carbon Footprint Development in Environmental Review from MPCA, Table 4-RDF (April 2008).

Fossil Fuel EF for CH_4 and N_2O based on 40 CFR Part 98 (GHG Mandatory Reporting Rule), Subpart C for Combustion Sources, Table C-2-Municipal Solid Waste.

CO_2e EF calculated based on Global Warming Potential (GWP) as follows:

	GWP	Fossil Fuel			Biogenic	
		Mass EF (kg/MMBtu)	Mass EF (lb/MMBtu)	CO_2e EF (lb/MMBtu)	Mass EF (lb/MMBtu)	CO_2e EF (lb/MMBtu)
CO_2 (mass)	1	--	88.95	88.95	118.6	118.6
CH_4 (mass)	25	3.2E-02	7.05E-02	1.76	NA	NA
N_2O (mass)	298	4.2E-03	9.26E-03	2.76	NA	NA
CO_2e	--	--	--	93.47	--	118.60

Conversion factor: 2.2046 lb/kg

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
North and South Units Performance Testing - June 5-7, 2007

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)
Facility name: Perham Resource Recovery Facility
Bold Font signifies a result below the laboratory detection limit. However, all nondetects were assumed to be detectable results in the calcs.

	2007 Stack Tests					2011 Stack Tests			
	Run 1a	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Date of Test	6/5/2007	6/5/2007	6/6/2007	6/7/2007	N/A	5/24/2011	5/25/2011	5/26/2011	N/A
Time of Runs (hrs)	855/1256	1325/1727	1500/1901	0720/1122	N/A	1630/2032	0735/1138	0735/1138	N/A
Start Time	6/5/07 8:55	6/5/07 13:25	6/6/07 15:00	6/7/07 7:20	N/A	16:30	7:35	7:05	N/A
End Time	6/5/07 12:56	6/5/07 17:27	6/6/07 19:01	6/7/07 11:22	N/A	20:32	11:38	11:10	N/A
Total Run Time (min)	241.00	242.00	241.00	242.00	N/A	242.00	243.00	245.00	N/A
Volume (DSCF)	141.47	142.42	144.43	147.39	143.93	143.27	144.02	143.44	143.58
Volume (DSCM)	4.006	4.033	4.09	4.17	4.07	4.06	4.08	4.06	4.07
Concentration (ng/dscm)	2.481	1.924	2.071	3.01	2.37	1.804	1.098	2.341	1.75
Oxygen	11.77	12.3	11.7	12.1	11.97	12.31	12.49	12.59	12.46
Total ng/DSCM @7% O_2	3.777	3.110	3.129	4.754	3.69	2.919	1.815	3.916	2.88
TEQ/dscm	0.035	0.023	0.022	0.048	0.032	0.035	0.023	0.022	0.027

Congener Totals	North and South MWCs (GP001/EU001&EU002) ng				2007 Average	North and South MWCs (GP001/EU001&EU002) ng			2011 Average	Combined Runs Average	Combined Runs Fraction of Total
	Run A	Run B	Run C	Run D	ng	Run E	Run F	Run G	ng	ng	
	Run 1a	Run 1	Run 2	Run 3	ng	Run 1	Run 2	Run 3	ng	ng	
Total OCDF	0.210	0.110	0.150	0.240	0.178	**0.100**	**0.100**	**0.100**	0.100	0.14	0.017
Total OCDD	1.200	0.720	1.100	1.100	1.030	0.870	0.660	1.200	0.910	0.98	0.114
TCDF, 2,3,7,8-	0.041	0.022	0.015	0.690	0.192	0.019	0.012	0.023	0.018	0.12	0.014
TCDD, 2,3,7,8-	0.0057	**0.0027**	**0.0044**	0.0092	0.006	**0.010**	**0.010**	**0.010**	0.010	0.01	0.001
PeCDF, 1,2,3,7,8-	0.066	0.036	0.029	0.110	0.060	**0.050**	**0.050**	**0.050**	0.050	0.06	0.006
PeCDF, 2,3,4,6,8-	0.100	0.063	0.053	0.140	0.089	0.072	**0.050**	0.086	0.069	0.08	0.009
PeCDD, 1,2,3,7,8-	0.023	0.019	0.016	0.036	0.024	**0.050**	**0.050**	**0.050**	0.050	0.03	0.004
HxCDF, 1,2,3,4,7,8-	0.130	0.086	0.064	0.180	0.115	0.056	**0.050**	0.058	0.055	0.09	0.010
HxCDF, 1,2,3,6,7,8-	0.110	0.070	0.063	0.150	0.098	**0.056**	**0.050**	0.061	0.056	0.08	0.009
HxCDF, 1,2,3,7,8,9-	0.043	0.028	0.027	0.058	0.039	**0.050**	**0.050**	**0.050**	0.050	0.04	0.005
HxCDF, 2,3,4,6,7,8-	0.110	0.079	0.088	0.140	0.104	0.083	0.057	0.097	0.079	0.09	0.011
HxCDD, 1,2,3,4,7,8-	0.025	0.027	0.027	0.034	0.028	**0.050**	**0.050**	**0.050**	0.050	0.04	0.004
HxCDD, 1,2,3,6,7,8-	0.090	0.075	0.092	0.099	0.089	0.095	0.064	0.140	0.100	0.09	0.011
HxCDD, 1,2,3,7,8,9-	0.043	0.038	0.046	0.046	0.043	0.053	**0.050**	0.073	0.059	0.05	0.006
HpCDF, 1,2,3,4,6,7,8-	0.380	0.240	0.240	0.430	0.323	0.160	0.100	0.160	0.140	0.24	0.028
HpCDF, 1,2,3,4,7,8,9-	0.053	0.039	0.042	0.070	0.051	**0.050**	**0.050**	**0.050**	0.050	0.05	0.006
HpCDD, 1,2,3,4,6,7,8-	0.680	0.460	0.680	0.710	0.633	0.650	0.440	0.860	0.650	0.64	0.074
Subtotal	**3.31**	**2.11**	**2.74**	**4.24**	**3.10**	**2.47**	**1.89**	**3.12**	**2.50**	**2.84**	**0.33**

Dioxin/Furan Test Results

Congeners	Concentrations (ng/dscf @ 7% O2)							Average	Maximum
	Run A	Run B	Run C	Run D	Run E	Run F	Run G		
Total OCDF	2.26E-03	1.25E-03	1.57E-03	2.57E-03	1.13E-03	1.15E-03	1.17E-03	1.58E-03	2.572E-03
Total OCDD	1.29E-02	8.17E-03	1.15E-02	1.18E-02	9.83E-03	7.57E-03	1.40E-02	1.08E-02	1.399E-02
TCDF, 2,3,7,8-	4.41E-04	2.50E-04	1.57E-04	7.39E-03	2.15E-04	1.38E-04	2.68E-04	1.27E-03	7.395E-03
TCDD, 2,3,7,8-	6.13E-05	3.06E-05	4.60E-05	9.86E-05	1.13E-04	1.15E-04	1.17E-04	8.30E-05	1.166E-04
PeCDF, 1,2,3,7,8-	7.10E-04	4.09E-04	3.03E-04	1.18E-03	5.65E-04	5.74E-04	5.83E-04	6.18E-04	1.179E-03
PeCDF, 2,3,4,6,8-	1.08E-03	7.15E-04	5.54E-04	1.50E-03	8.13E-04	5.74E-04	1.00E-03	8.91E-04	1.500E-03
PeCDD, 1,2,3,7,8-	2.48E-04	2.16E-04	1.67E-04	3.86E-04	5.65E-04	5.74E-04	5.83E-04	3.91E-04	5.831E-04
HxCDF, 1,2,3,4,7,8-	1.40E-03	9.76E-04	6.69E-04	1.93E-03	6.32E-04	5.74E-04	6.76E-04	9.79E-04	1.929E-03
HxCDF, 1,2,3,6,7,8-	1.18E-03	7.94E-04	6.59E-04	1.61E-03	6.32E-04	5.74E-04	7.11E-04	8.80E-04	1.608E-03
HxCDF, 1,2,3,7,8,9-	4.63E-04	3.18E-04	2.82E-04	6.22E-04	5.65E-04	5.74E-04	5.83E-04	4.87E-04	6.216E-04
HxCDF, 2,3,4,6,7,8-	1.18E-03	8.97E-04	9.21E-04	1.50E-03	9.37E-04	6.54E-04	1.13E-03	1.03E-03	1.500E-03
HxCDD, 1,2,3,4,7,8-	2.69E-04	3.06E-04	2.82E-04	3.64E-04	5.65E-04	5.74E-04	5.83E-04	4.21E-04	5.831E-04
HxCDD, 1,2,3,6,7,8-	9.69E-04	8.51E-04	9.62E-04	1.06E-03	1.07E-03	7.34E-04	1.63E-03	1.04E-03	1.633E-03
HxCDD, 1,2,3,7,8,9-	4.63E-04	4.31E-04	4.81E-04	4.93E-04	5.99E-04	5.74E-04	8.51E-04	5.56E-04	8.513E-04
HpCDF, 1,2,3,4,6,7,8-	4.09E-03	2.72E-03	2.51E-03	4.61E-03	1.81E-03	1.15E-03	1.87E-03	2.68E-03	4.608E-03
HpCDF, 1,2,3,4,7,8,9-	5.70E-04	4.43E-04	4.39E-04	7.50E-04	5.65E-04	5.74E-04	5.83E-04	5.61E-04	7.502E-04
HpCDD, 1,2,3,4,6,7,8-	7.32E-03	5.22E-03	7.11E-03	7.61E-03	7.34E-03	5.05E-03	1.00E-02	7.10E-03	1.003E-02
SubTotal	**0.036**	**0.024**	**0.029**	**0.045**	**0.028**	**0.022**	**0.036**	**0.031**	**0.051**

(ng/dscf @ 7%O2)i = (ng/dscf meter)i * [(20.9-7%)/(20.9-%O2i)]

Example Calc: PeCDF Fraction of Total = PeCDF Average (ng) / Total Dioxin (ng) = 1.107500000000 (ng) / 9.68250000000 (ng) = 0.114

Dioxin/Furan Test Results

Congeners	Emissions (lb/hr)							Average	Maximum
	Run A	Run B	Run C	Run D	Run E	Run F	Run G		
Total OCDF	1.755E-13	9.718E-14	1.244E-13	2.072E-13	8.845E-14	8.997E-14	9.031E-14	1.25E-13	2.07E-13
Total OCDD	1.003E-12	6.361E-13	9.122E-13	9.497E-13	7.695E-13	5.938E-13	1.084E-12	8.50E-13	1.08E-12
TCDF, 2,3,7,8-	3.426E-14	1.944E-14	1.244E-14	5.957E-13	1.681E-14	1.080E-14	2.077E-14	1.01E-13	5.96E-13
TCDD, 2,3,7,8-	4.763E-15	2.385E-15	3.649E-15	7.943E-15	8.845E-15	8.997E-15	9.031E-15	6.52E-15	9.03E-15
PeCDF, 1,2,3,7,8-	5.515E-14	3.180E-14	2.405E-14	9.497E-14	4.422E-14	4.499E-14	4.515E-14	4.86E-14	9.50E-14
PeCDF, 2,3,4,6,8-	8.356E-14	5.566E-14	4.395E-14	1.209E-13	6.368E-14	4.499E-14	7.767E-14	7.01E-14	1.21E-13
PeCDD, 1,2,3,7,8-	1.922E-14	1.679E-14	1.327E-14	3.108E-14	4.422E-14	4.499E-14	4.515E-14	3.07E-14	4.52E-14
HxCDF, 1,2,3,4,7,8-	1.086E-13	7.598E-14	5.307E-14	1.554E-13	4.953E-14	4.499E-14	5.238E-14	7.71E-14	1.55E-13
HxCDF, 1,2,3,6,7,8-	9.192E-14	6.184E-14	5.224E-14	1.295E-13	4.953E-14	4.499E-14	5.509E-14	6.93E-14	1.30E-13
HxCDF, 1,2,3,7,8,9-	3.593E-14	2.474E-14	2.239E-14	5.008E-14	4.422E-14	4.499E-14	4.515E-14	3.82E-14	5.01E-14
HxCDF, 2,3,4,6,7,8-	9.192E-14	6.979E-14	7.298E-14	1.209E-13	7.341E-14	5.128E-14	8.760E-14	8.11E-14	1.21E-13
HxCDD, 1,2,3,4,7,8-	2.089E-14	2.385E-14	2.239E-14	2.936E-14	4.422E-14	4.499E-14	4.515E-14	3.30E-14	4.52E-14
HxCDD, 1,2,3,6,7,8-	7.521E-14	6.626E-14	7.629E-14	8.548E-14	8.403E-14	5.758E-14	1.264E-13	8.16E-14	1.26E-13
HxCDD, 1,2,3,7,8,9-	3.593E-14	3.357E-14	3.815E-14	3.972E-14	4.688E-14	4.499E-14	6.593E-14	4.36E-14	6.59E-14
HpCDF, 1,2,3,4,6,7,8-	3.175E-13	2.120E-13	1.990E-13	3.713E-13	1.415E-13	8.997E-14	1.445E-13	2.11E-13	3.71E-13
HpCDF, 1,2,3,4,7,8,9-	4.429E-14	3.446E-14	3.483E-14	6.044E-14	4.422E-14	4.499E-14	4.515E-14	4.41E-14	6.04E-14
HpCDD, 1,2,3,4,6,7,8-	5.682E-13	4.064E-13	5.639E-13	6.130E-13	5.749E-13	3.959E-13	7.767E-13	5.57E-13	7.77E-13
SubTotal	**2.77E-12**	**1.87E-12**	**2.27E-12**	**3.66E-12**	**2.19E-12**	**1.70E-12**	**2.82E-12**	**2.47E-12**	**4.06E-12**

Congeners	Emissions (g/s)							Average	Fraction of Total	Standard Deviation	95% UCL Pro Student-t	UCL Fraction of Total
	Run A	Run B	Run C	Run D	Run E	Run F	Run G	(g/s)				
Total OCDF	2.211E-14	1.224E-14	1.567E-14	2.611E-14	1.114E-14	1.134E-14	1.138E-14	1.57E-14	0.017	6.291E-15	2.11E-14	0.022
Total OCDD	1.263E-13	8.015E-14	1.149E-13	1.197E-13	9.696E-14	7.482E-14	1.365E-13	1.07E-13	0.114	2.151E-14	1.24E-13	0.132
TCDF, 2,3,7,8-	4.317E-15	2.449E-15	1.567E-15	7.506E-14	2.117E-15	1.360E-15	2.617E-15	1.28E-14	0.014	2.97E-14	7.76E-14	0.082
TCDD, 2,3,7,8-	6.001E-16	3.005E-16	4.597E-16	1.001E-15	1.114E-15	1.134E-15	1.138E-15	8.21E-16	0.001	3.604E-16	1.08E-15	0.001
PeCDF, 1,2,3,7,8-	6.949E-15	4.007E-15	3.030E-15	1.197E-14	5.572E-15	5.668E-15	5.689E-15	6.13E-15	0.006	3.141E-15	8.24E-15	0.009
PeCDF, 2,3,4,6,8-	1.053E-14	7.013E-15	5.538E-15	1.523E-14	8.024E-15	5.668E-15	9.786E-15	8.83E-15	0.009	3.701E-15	1.13E-14	0.012
PeCDD, 1,2,3,7,8-	2.422E-15	2.115E-15	1.672E-15	3.916E-15	5.572E-15	5.668E-15	5.689E-15	3.86E-15	0.004	1.765E-15	5.19E-15	0.006
HxCDF, 1,2,3,4,7,8-	1.369E-14	9.573E-15	6.687E-15	1.958E-14	6.241E-15	5.668E-15	6.600E-15	9.72E-15	0.010	5.461E-15	1.45E-14	0.015
HxCDF, 1,2,3,6,7,8-	1.158E-14	7.792E-15	6.583E-15	1.632E-14	6.241E-15	5.668E-15	6.941E-15	8.73E-15	0.009	4.153E-15	1.21E-14	0.013
HxCDF, 1,2,3,7,8,9-	4.527E-15	3.117E-15	2.821E-15	6.309E-15	5.572E-15	5.668E-15	5.689E-15	4.81E-15	0.005	1.439E-15	5.82E-15	0.006
HxCDF, 2,3,4,6,7,8-	1.158E-14	8.794E-15	9.195E-15	1.523E-14	9.250E-15	6.462E-15	1.104E-14	1.02E-14	0.011	3E-15	1.23E-14	0.013
HxCDD, 1,2,3,4,7,8-	2.632E-15	3.005E-15	2.821E-15	3.699E-15	5.572E-15	5.668E-15	5.689E-15	4.16E-15	0.004	1.381E-15	5.51E-15	0.006
HxCDD, 1,2,3,6,7,8-	9.476E-15	8.349E-15	9.613E-15	1.077E-14	1.059E-14	7.255E-15	1.593E-14	1.03E-14	0.011	1.343E-15	1.23E-14	0.013
HxCDD, 1,2,3,7,8,9-	4.527E-15	4.230E-15	4.806E-15	5.004E-15	5.907E-15	5.668E-15	8.307E-15	5.49E-15	0.006	6.509E-16	6.50E-15	0.007
HpCDF, 1,2,3,4,6,7,8-	4.001E-14	2.672E-14	2.508E-14	4.678E-14	1.783E-14	1.134E-14	1.821E-14	2.66E-14	0.028	1.333E-14	3.59E-14	0.038
HpCDF, 1,2,3,4,7,8,9-	5.580E-15	4.341E-15	4.388E-15	7.615E-15	5.572E-15	5.668E-15	5.689E-15	5.55E-15	0.006	1.19E-15	6.35E-15	0.007
HpCDD, 1,2,3,4,6,7,8-	7.160E-14	5.120E-14	7.105E-14	7.724E-14	7.244E-14	4.988E-14	9.786E-14	7.02E-14	0.074	1.185E-14	8.22E-14	0.087
SubTotal	**3.48E-13**	**2.35E-13**	**2.86E-13**	**4.61E-13**	**2.76E-13**	**2.15E-13**	**3.55E-13**	**3.11E-13**	**0.33**	**1.10E-13**	**4.42E-13**	**0.47**
TCDF	1.053E-13	9.462E-14	6.583E-14	2.067E-13	8.247E-14	4.534E-14	9.331E-14	9.908E-14	1.051E-01	5.64E-14	1.37E-13	1.452E-01
TCDD	8.423E-14	9.796E-14	8.463E-14	1.305E-13	8.804E-14	5.441E-14	1.058E-13	9.223E-14	9.780E-02	2.465E-14	1.09E-13	1.159E-01
PeCDF	1.263E-13	9.016E-14	6.478E-14	1.958E-13	3.789E-14	1.247E-14	5.462E-14	8.315E-14	8.818E-02	6.611E-14	1.28E-13	1.362E-01
PeCDD	1.158E-13	1.224E-13	1.149E-13	1.414E-13	1.226E-13	8.162E-14	1.707E-13	1.242E-13	1.317E-01	1.956E-14	1.44E-13	1.529E-01
HxCDF	1.158E-13	7.681E-14	5.851E-14	1.414E-13	3.566E-14	1.474E-14	4.779E-14	7.011E-14	7.434E-02	4.801E-14	1.03E-13	1.093E-01
HxCDD	1.579E-13	1.447E-13	1.776E-13	1.741E-13	1.895E-13	1.134E-13	2.617E-13	1.741E-13	1.846E-01	2.752E-14	2.08E-13	2.206E-01
HpCDF	4.527E-14	3.673E-14	4.179E-14	7.832E-14	1.783E-14	1.134E-14	1.821E-14	3.564E-14	3.780E-02	2.371E-14	5.25E-14	5.568E-02
HpCDD	1.474E-13	1.080E-13	1.463E-13	1.523E-13	1.449E-13	9.976E-14	1.934E-13	1.417E-13	1.503E-01	2.293E-14	1.65E-13	1.744E-01
OCDF	2.211E-14	1.224E-14	1.567E-14	2.611E-14	1.114E-14	1.134E-14	1.138E-14	1.571E-14	1.666E-02	6.291E-15	2.11E-14	2.237E-02
OCDD	1.263E-13	8.015E-14	1.149E-13	1.197E-13	9.696E-14	7.482E-14	1.365E-13	1.071E-13	1.135E-01	2.151E-14	1.24E-13	1.319E-01
Dioxin Total	**1.05E-12**	**8.64E-13**	**8.85E-13**	**1.37E-12**	**8.27E-13**	**5.19E-13**	**1.09E-12**	**9.43E-13**	**1.00**		**1.19E-12**	**1.26**
						Stack Test Dioxin Total		**9.4304E-13**	g/s			
						UCL Congener Sub-Total		3.1091E-13				

[1] For TCDF, 2, 3, 7, 8- the 95% confidence interval exceeded the maximum emission value, therefore the recommended 97.5% confidence level was used.

[2] A data set with more than 7 readings should be used to compute the 95% UCL, however we are limited by the number of samples taken during the stack test, therefore the sample size that was available was used

$(ng/dscm\ @\ 7\%O2)_i$ = $(ng/dscf\ meter\ @\ 7\%O2)_i$ * 35.3145 cu ft/cu m

$(lb/hr)_i$ = $(ng/dscf\ @\ 7\%\ O2)_i$ / [10^9 (ng/g) * 453.59 (g/lb)] * $(dscfh\ @\ 7\%\ O2\ stack)_i$

$(g/s)_i$ = $(lb/hr)_i$ * 453.59 (g/lb) / 3600 (s/hr)

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
Dioxin/Furan Emission - South Unit, AAAA

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)
Facility name: Perham Resource Recovery Facility

Item	Units	Value	Notes
Total Dioxin/Furans NSPS Limit	C_d (ng/dscm) @ 7% O2	13	40 CFR Part 60 NSPS Subpart AAAA—Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001.
Oxygen basis	$\%O_2$	7.0	Oxygen concentration that the NSPS limit is based on.
Oxygen correction factor	---	1.5	Corrects NSPS limit to 0% oxygen basis = (20.9 - 0)/(20.9 - 7.0)
F-factor, Fd	F_d (dscf/MMBtu)	9,570	Ratio of the flue gas volume generated to the heat content of MSW combusted. See AP-42 Section 2.1. Based on oxygen concentration of 0%.
MSW Heat Value	HV (Btu/lb)	4,379	Representative heat value of the MSW combusted at Pope Douglas.
Unit Capacity	MSW (ton/hr)	4.2	Capacity of South Unit = 100 ton/day, 4.2 ton/hr

Sample calculation converting NSPS limit in ng/dscm @ 7% O2 to units of lb/MMBtu and g/s:

C (lb/MMBtu) = C_d (lb/dscf) * F_d (dscf/MMBtu) * 20.9/(20.9 - %O2) (EPA RM19, Eqn 19-1)

NSPS Limit (lb/MMBtu) = 13.0 (ng/dscm) * 1/10^9 (g/ng) * 1/453.59 (lb/g) * 1/35.3145 (m^3/ft^3) * 9,570 (dscf/MMBtu) * 1.5 O2 correction = 1.168E-08 lb/MMBtu

NSPS Limit (g/s) = 0.0000000117 (lb/MMBtu) * 1/10^6 (MMBtu/Btu) * 453.59 (g/lb) * 4,379 (Btu/lb) * 2,000 (lb/ton) * 4.2 (ton/hr) * 1/3,600 (hr/s) = 5.369E-08 g/s

Throughput	South Unit , 100 (ton/day) or ton/hr = 4.2			South Unit , 100 (ton/day) or ton/hr = 4.17		
	South & North Units Stack Test Results			South Unit		
Congener	95% UCL (g/s) [1]	UCL Fraction of Total [1, 5]	Equivalent 95% UCL [4] (ng/dscm) @ 7% O2	NSPS Derived Limit (g/s) [2]	Chronic (g/s) [3]	Chronic [4] (ng/dscm) @ 7% O2
Total OCDF	2.110E-14	0.022	5.11E-06	1.201E-09	1.201E-09	0.2909
Total OCDD	1.244E-13	0.132	3.01E-05	7.083E-09	7.083E-09	1.7149
TCDF, 2,3,7,8-	7.764E-14	0.082	1.88E-05	4.421E-09	4.421E-09	1.0703
TCDD, 2,3,7,8-	1.084E-15	0.001	2.62E-07	6.172E-11	6.172E-11	0.0149
PeCDF, 1,2,3,7,8-	8.237E-15	0.009	1.99E-06	4.690E-10	4.690E-10	0.1135
PeCDF, 2,3,4,6,8-	1.133E-14	0.012	2.74E-06	6.451E-10	6.451E-10	0.1562
PeCDD, 1,2,3,7,8-	5.187E-15	0.006	1.26E-06	2.953E-10	2.953E-10	0.0715
HxCDF, 1,2,3,4,7,8-	1.453E-14	0.015	3.52E-06	8.273E-10	8.273E-10	0.2003
HxCDF, 1,2,3,6,7,8-	1.212E-14	0.013	2.93E-06	6.901E-10	6.901E-10	0.1671
HxCDF, 1,2,3,7,8,9-	5.820E-15	0.006	1.41E-06	3.314E-10	3.314E-10	0.0802
HxCDF, 2,3,4,6,7,8-	1.225E-14	0.013	2.97E-06	6.975E-10	6.975E-10	0.1689
HxCDD, 1,2,3,4,7,8-	5.514E-15	0.006	1.34E-06	3.140E-10	3.140E-10	0.0760
HxCDD, 1,2,3,6,7,8-	1.232E-14	0.013	2.98E-06	7.015E-10	7.015E-10	0.1698
HxCDD, 1,2,3,7,8,9-	6.503E-15	0.007	1.57E-06	3.703E-10	3.703E-10	0.0896
HpCDF, 1,2,3,4,6,7,8-	3.590E-14	0.038	8.69E-06	2.044E-09	2.044E-09	0.4949
HpCDF, 1,2,3,4,7,8,9-	6.350E-15	0.007	1.54E-06	3.616E-10	3.616E-10	0.0875
HpCDD, 1,2,3,4,6,7,8-	8.216E-14	0.087	1.99E-05	4.678E-09	4.678E-09	1.1326
SubTotal	**4.424E-13**	**4.692E-01**	**1.071E-04**	**2.519E-08**	**2.519E-08**	**6.099**
TCDF	1.369E-13	0.105	3.31E-05	5.641E-09	5.641E-09	1.3658
TCDD	1.093E-13	0.098	2.65E-05	5.252E-09	5.252E-09	1.2715
PeCDF	1.284E-13	0.088	3.11E-05	4.735E-09	4.735E-09	1.1463
PeCDD	1.442E-13	0.132	3.49E-05	7.072E-09	7.072E-09	1.7123
HxCDF	1.031E-13	0.074	2.50E-05	3.992E-09	3.992E-09	0.9664
HxCDD	2.080E-13	0.185	5.04E-05	9.914E-09	9.914E-09	2.4003
HpCDF	5.251E-14	0.038	1.27E-05	2.029E-09	2.029E-09	0.4913
HpCDD	1.645E-13	0.150	3.98E-05	8.069E-09	8.069E-09	1.9536
OCDF	2.110E-14	0.017	5.11E-06	8.947E-10	8.947E-10	0.2166
OCDD	1.244E-13	0.114	3.01E-05	6.096E-09	6.096E-09	1.4758
Subtotal	**1.19E-12**	**1.00**	**2.89E-04**	**5.37E-08**	**5.37E-08**	**13.00**

	Stack Test Average		NSPS Derived Limit
Total dioxins (g/s)	9.430E-13		5.369E-08

[1] Stack test results from Interpoll Laboratories, Inc. for tests performed on June 5-7, 2007 and May 24-26, 2011.

[2] Congener emission rates based on congener fraction determined by stack test and the NSPS limit of 13.0 ng/dscm (0.0000000537 g/s).

[3] Chronic (g/s) = NSPS derived congener limit (g/s) = NSPS total dioxin limit (g/s) * Stack test derived Congener fraction of total dioxin.

[4] Emission factors calculated from the g/s values using the same equations above to calculate the NSPS limit in ng/dscm @ 7 % O2 to units of g/s.

[5] The 17-Congener fraction of totals are based on the UCL fractions. The congener totals are based on the test results average fraction.

Prairie Lakes Municipal Solid Waste Authority/Perham Resource Recovery Facility
Part 70 Permit Reissuance Application - 2017
Dioxin/Furan Emissions - North Unit, State Only Limit from the Facility's HHRA

AQ Facility ID No.: 11100036 Agency Interest ID No.: 726 (old AQ File Number 116H)
Facility name: Perham Resource Recovery Facility

Item	Units	Value	Notes
Total Dioxin/Furans Proposed Limit	C_d (ng/dscm) @ 7% O2	20	PLMSWA proposes a state only Dioxin/Furan limit of 20 ng/dscm @ 7% O_2 based on the Facility's HHRA.
Oxygen basis	$\%O_2$	7.0	Oxygen concentration that the proposed limit is based on.
Oxygen correction factor	---	1.5	Corrects proposed limit to 0% oxygen basis = (20.9 - 0)/(20.9 - 7.0)
F-factor, Fd	F_d (dscf/MMBtu)	9,570	Ratio of the flue gas volume generated to the heat content of MSW combusted. See AP-42 Section 2.1. Based on oxygen concentration of 0%.
MSW Heat Value	HV (Btu/lb)	4,379	Representative heat value of the MSW combusted at PRRF.
Unit Capacity	MSW (ton/hr)	4.2	Capacity of North Unit or South Unit = 100 ton/day each, 4.2 ton/hr each

Sample calculation converting proposed limit in ng/dscm @ 7% O2 to units of lb/MMBtu and g/s:

C (lb/MMBtu) = C_d (lb/dscf) * F_d (dscf/MMBtu) * 20.9/(20.9 - %O2) (EPA RM19, Eqn 19-1)

Proposed Limit (lb/MMBtu) = 20.0 (ng/dscm) * 1/10^9 (g/ng) * 1/453.59 (lb/g) * 1/35.3145 (m^3/ft^3) * 9,570 (dscf/MMBtu) * 1.5 O2 correction = 1.797E-08 lb/MMBtu

North Unit Limit (g/s) = 0.0000000180 (lb/MMBtu) * 1/10^6 (MMBtu/Btu) * 453.59 (g/lb) * 4,379 (Btu/lb) * 2,000 (lb/ton) * 4.2 (ton/hr) * 1/3,600 (hr/s) = 8.261E-08 g/s

Throughput	North Unit , 100 (ton/day) or ton/hr = 4.2			North Unit , 100 (ton/day) or ton/hr = 4.2		
	South & North Units Stack Test Results			North Unit		
Congener	95% UCL (g/s) [1]	UCL Fraction of Total [1, 5]	Equivalent 95% UCL [4] (ng/dscm) @ 7% O2	Derived Limit (g/s) [2]	Chronic (g/s) [3]	Chronic [4] (ng/dscm) @ 7% O2
Total OCDF	2.110E-14	0.022	5.11E-06	1.848E-09	1.848E-09	0.4475
Total OCDD	1.244E-13	0.132	3.01E-05	1.090E-08	1.090E-08	2.6383
TCDF, 2,3,7,8-	7.764E-14	0.082	1.88E-05	6.801E-09	6.801E-09	1.6466
TCDD, 2,3,7,8-	1.084E-15	0.001	2.62E-07	9.495E-11	9.495E-11	0.0230
PeCDF, 1,2,3,7,8-	8.237E-15	0.009	1.99E-06	7.215E-10	7.215E-10	0.1747
PeCDF, 2,3,4,6,8-	1.133E-14	0.012	2.74E-06	9.925E-10	9.925E-10	0.2403
PeCDD, 1,2,3,7,8-	5.187E-15	0.006	1.26E-06	4.544E-10	4.544E-10	0.1100
HxCDF, 1,2,3,4,7,8-	1.453E-14	0.015	3.52E-06	1.273E-09	1.273E-09	0.3082
HxCDF, 1,2,3,6,7,8-	1.212E-14	0.013	2.93E-06	1.062E-09	1.062E-09	0.2570
HxCDF, 1,2,3,7,8,9-	5.820E-15	0.006	1.41E-06	5.098E-10	5.098E-10	0.1234
HxCDF, 2,3,4,6,7,8-	1.225E-14	0.013	2.97E-06	1.073E-09	1.073E-09	0.2598
HxCDD, 1,2,3,4,7,8-	5.514E-15	0.006	1.34E-06	4.830E-10	4.830E-10	0.1169
HxCDD, 1,2,3,6,7,8-	1.232E-14	0.013	2.98E-06	1.079E-09	1.079E-09	0.2613
HxCDD, 1,2,3,7,8,9-	6.503E-15	0.007	1.57E-06	5.696E-10	5.696E-10	0.1379
HpCDF, 1,2,3,4,6,7,8-	3.590E-14	0.038	8.69E-06	3.145E-09	3.145E-09	0.7614
HpCDF, 1,2,3,4,7,8,9-	6.350E-15	0.007	1.54E-06	5.562E-10	5.562E-10	0.1347
HpCDD, 1,2,3,4,6,7,8-	8.216E-14	0.087	1.99E-05	7.197E-09	7.197E-09	1.7424
SubTotal	**4.424E-13**	**4.692E-01**	**1.071E-04**	**3.876E-08**	**3.876E-08**	**9.383**
TCDF	1.369E-13	0.105	3.31E-05	8.679E-09	8.679E-09	2.1012
TCDD	1.093E-13	0.098	2.65E-05	8.079E-09	8.079E-09	1.9561
PeCDF	1.284E-13	0.088	3.11E-05	7.284E-09	7.284E-09	1.7635
PeCDD	1.442E-13	0.132	3.49E-05	1.088E-08	1.088E-08	2.6344
HxCDF	1.031E-13	0.074	2.50E-05	6.141E-09	6.141E-09	1.4868
HxCDD	2.080E-13	0.185	5.04E-05	1.525E-08	1.525E-08	3.6928
HpCDF	5.251E-14	0.038	1.27E-05	3.122E-09	3.122E-09	0.7559
HpCDD	1.645E-13	0.150	3.98E-05	1.241E-08	1.241E-08	3.0056
OCDF	2.110E-14	0.017	5.11E-06	1.376E-09	1.376E-09	0.3333
OCDD	1.244E-13	0.114	3.01E-05	9.378E-09	9.378E-09	2.2705
Subtotal	**1.2E-12**	**1.00**	**2.9E-04**	**8.3E-08**	**8.3E-08**	**20.00**
Total dioxins (g/s)	Stack Test Average			NSPS Derived Limit		
	9.430E-13			8.261E-08		

[1] Stack test results from Interpoll Laboratories, Inc. for tests performed on June 5-7, 2007 and May 24-26, 2011.

[2] Congener emission rates based on congener fraction determined by stack test and the proposed limit of 20.0 ng/dscm per unit (0.0000000826 g/s).

[3] Chronic (g/s) = derived congener limit (g/s) = proposed total dioxin limit (g/s) * Stack test derived Congener fraction of total dioxin.

[4] Emission factors calculated from the g/s values using the same equations above to calculate the proposed limit in ng/dscm @ 7 % O2 to units of g/s.

[5] The 17-Congener fraction of totals are based on the UCL fractions. The congener totals are based on the test results average fraction.

Attachment 2 – Subject item inventory and facility requirements

SI List

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	
Activity	Insignificant Air Emissions Activity	ACTV 1	Null	All IAs	
Agency Interest	Conventional Site	AISI 726	Null	Null	
Component Group	Air Component Group	COMG 3	Null	Continuous Emission Monitors	
		COMG 4	Null	Continuous Opacity Monitors	
Equipment	Boiler	EQUI 33	EU005	Auxiliary Boiler w/ FGR and low NOx burners	
	Continuous Emission Monitor	EQUI 9	MR019	South Unit O2/CO/SO2 Monitor - O2	
		EQUI 10	MR019	South Unit O2/CO/SO2 Monitor - CO	
		EQUI 11	MR019	South Unit O2/CO/SO2 Monitor - SO2	
		EQUI 14	MR022	South Unit NOx Monitor	
		EQUI 17	MR002	South Unit inlet O2/SO2 - O2	
		EQUI 19	MR004	South Unit inlet O2/SO2 - SO2	
		EQUI 31	MR016	North Unit O2/CO/SO2 Monitor - O2	
		EQUI 41	MR016	North Unit O2/CO/SO2 Monitor - CO	
		EQUI 42	MR016	North Unit O2/CO/SO2 Monitor - SO2	
	Continuous Opacity Monitor	EQUI 15	MR023	South Unit Opacity	
		EQUI 44	Null	North Unit Opacity	
	Data Acquisition System	EQUI 7	DA001	DAS	
	Incinerator	EQUI 35	EU001	South MSW Incinerator	
		EQUI 36	EU002	North MSW Incinerator	
	Parametric Monitor	EQUI 8	MR018	Baghouse Pressure Drop - TREA 1	
		EQUI 12	MR020	South Unit Steam Flow	
		EQUI 13	MR021	Baghouse Pressure Drop - TREA 4	
		EQUI 20	MR007	North Unit Temperature - Secondary	
		EQUI 21	MR008	South Unit Temperature - Secondary	
		EQUI 25	MR015	Boiler Pressure	
		EQUI 26	MR005	North Unit Temperature - Primary	
		EQUI 27	MR006	South Unit Temperature - Primary	
		EQUI 28	MR010	South Unit Pressure	
		EQUI 29	MR011	North Unit Pressure	
		EQUI 30	MR013	Baghouse Inlet Temp - TREA 1	
		EQUI 32	MR017	North Unit Steam Flow	
		EQUI 43	Null	Baghouse Inlet Temp - TREA 4	
Fugitive	Paved Road	FUGI 1	FS002	Traffic and Paved Roads	
Structure	Building	STRU 10	Null	B2T1	
		STRU 11	Null	B1T1 - 1st tier	
		STRU 12	Null	B1T1 - 2nd tier	
		STRU 13	Null	BLD 3	
		STRU 14	Null	BLD 4	
	Stack/Vent	STRU 2	SV002	South Unit Dump Stack - EQUI 35	
		STRU 3	SV003	North Unit Dump Stack - EQUI 36	
		STRU 4	SV004	Auxiliary Boiler Stack	
		STRU 5	SV009	Combined MWC Stack	
		STRU 6	SV005	Roof Exhauster Fan	
		STRU 7	SV006	Roof Exhauster Fan	
		STRU 8	SV007	Roof Exhauster Fan	
		STRU 9	SV008	Roof Exhauster Fan	
Total Facility	Air Quality Total Facility	TFAC 2	11100036	Perham Resource Recovery Facility	
Treatment	016-Fabric Filter - High Temp, T>250 Degrees F	TREA 1	CE001	Fabric Filter - High Temperature, i.e., T>250 Degrees F	
		TREA 4	CE004	Fabric Filter - High Temperature, i.e., T>250 Degrees F	
	026-Flue Gas Recirculation	TREA 8	Null	Flue Gas Recirculation	
	041-Dry Limestone Injection	TREA 2	CE002	Dry Limestone Injection	
		TREA 5	CE005	Dry Limestone Injection	
	048-Activated Carbon Adsorption	TREA 3	CE003	Activated Carbon Adsorption	
		TREA 6	CE006	Activated Carbon Adsorption	
	205-Low Nox Burners	TREA 9	Null	Low NOx burners	

Insignificant Activities

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

SI Category	SI Type	Status Description	Sub Attribute Description	
Activity	Insignificant Air Emissions Activity	Active / Existing	Minn. R. 7007.1300, subp. 3(B)(2)	
			Minn. R. 7007.1300, subp. 3(E)	
			Minn. R. 7007.1300, subp. 3(F)	
			Minn. R. 7007.1300, subp. 3(G)	

Emission Units 1

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

SI Type	Subject Item ID	Delta Designation	Description	Manufacturer	Model	Max Design Capacity	Max Design Capacity Units	Material	Firing Method	Subject to CSAPR?	Electric Generating Capacity (MW)	Construction Start Date	Operation Start Date	Modification Date	
Boiler	EQUI 33	EU005	Auxiliary Boiler w/ FGR and low NOx burners	Victory Energy	JE-390	70,000	pounds/hours	Natural Gas	Not coal burning	N	Null	1/1/2004	4/1/2004	Null	
Incinerator	EQUI 35	EU001	South MSW Incinerator	Synergy	CA-3003-65-40	100	tons/days	Solid Waste	Overfeed stoker (traveling grate)	N	Null	7/1/1985	9/1/1986	Null	
	EQUI 36	EU002	North MSW Incinerator	Synergy	CA-3003-65-40	100	tons/days	Solid Waste	Overfeed stoker (traveling grate)	N	Null	7/1/1985	9/1/1986	Null	

Component Groups

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item ID	Delta Designation	Description	Group Member ID	
COMG 3	Null	Continuous Emission Monitors	EQUI 9	
			EQUI 10	
			EQUI 11	
			EQUI 14	
			EQUI 17	
			EQUI 19	
			EQUI 31	
			EQUI 41	
			EQUI 42	
COMG 4	Null	Continuous Opacity Monitors	EQUI 15	
			EQUI 44	

PTE by SI

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Boiler	EQUI 33	EU005	Auxiliary Boiler w/ FGR and low NOx burners	1,4-Dichlorobenzene (para-)	9.82e-05	0.00043	0.00043	
					Arsenic compounds	1.64e-05	7.17e-05	7.17e-05	
					Benzene	0.000172	0.000753	0.000753	
					Beryllium	9.82e-07	4.3e-06	4.3e-06	
					Cadmium compounds	9e-05	0.000394	0.000394	
					Carbon Dioxide Equivalent	9,778	42,826	42,826	
					Carbon Monoxide	6.88	30.12	30.12	
					Chromium compounds	0.000115	0.000502	0.000502	
					Cobalt compounds	6.88e-06	3.01e-05	3.01e-05	
					Formaldehyde	0.00614	0.0269	0.0269	
					HAPs - Total	0.15	0.68	0.68	
					Hexane	0.147	0.645	0.645	
					Lead	4.09e-05	0.000179	0.000179	
					Manganese compounds	3.11e-05	0.000136	0.000136	
					Mercury	2.13e-05	9.32e-05	9.32e-05	
					Naphthalene	4.99e-05	0.000219	0.000219	
					Nickel compounds	0.000172	0.000753	0.000753	
					Nitrogen Oxides	8.19	35.86	11.47	
					Particulate Matter	0.622	2.73	2.73	
					PM < 2.5 micron	0.622	2.73	2.73	
					PM < 10 micron	0.622	2.73	2.73	
					Polycyclic organic matter	7.22e-06	3.16e-05	3.16e-05	
					Selenium compounds	1.96e-06	8.61e-06	8.61e-06	
					Sulfur Dioxide	0.0491	0.215	0.215	
					Toluene	0.000278	0.00122	0.00122	
					Volatile Organic Compounds	0.45	1.97	1.97	
	Incinerator	EQUI 35	EU001	South MSW Incinerator	1,2,4-Trichlorobenzene	5.66e-06	2.48e-05	2.48e-05	
					1,4-Dichlorobenzene (para-)	8.24e-06	3.61e-05	3.61e-05	
					2,4-Dinitrotoluene	9.13e-06	4e-05	4e-05	
					2,4,6-Trichlorophenol	8.45e-06	3.7e-05	3.7e-05	
					Acetaldehyde	0.000192	0.000841	0.000841	
					Acrolein	0.000163	0.000714	0.000714	
					Antimony compounds	0.000308	0.00135	0.00135	
					Arsenic compounds	1.68e-05	7.35e-05	7.35e-05	
					Beryllium	8.21e-07	3.6e-06	3.6e-06	
					Bis(2-ethylhexyl) phthalate	3.7e-05	0.000162	0.000162	
					Cadmium compounds	0.000821	0.127	0.0036	
					Carbon Dioxide Equivalent	9,375	41,063	41,063	
					Carbon Monoxide	3.92	27.9	17.16	
					Chromium compounds	0.000987	0.00433	0.00433	
					Cobalt compounds	2.8e-05	0.000123	0.000123	
					Dibenzofuran	2.38e-06	1.04e-05	1.04e-05	
					Dioxins and Furans	5.34e-07	2.34e-06	2.34e-06	
					Formaldehyde	0.000563	0.00246	0.00246	
					HAPs - Total	1.61	104.55	7.04	
					Hexachlorobenzene	5.39e-06	2.36e-05	2.36e-05	
					Hexachlorobutadiene	7.74e-06	3.39e-05	3.39e-05	
					Hexachlorocyclopentadiene	7.54e-06	3.3e-05	3.3e-05	
					Hexachloroethane	1.49e-05	6.53e-05	6.53e-05	
					Hydrofluoric acid	0.0166	0.0727	0.0727	
					Hydrogen Chloride	1.56	101.28	6.84	
					Isophorone	3.52e-06	1.54e-05	1.54e-05	
					Lead	0.00821	2.92	0.036	
					Manganese compounds	0.00483	0.0211	0.0211	
					Mercury	0.00168	0.0799	0.00737	
					Muni Waste Combust Organics	4.84	157.94	21.19	
					Naphthalene	3.2e-05	0.00014	0.00014	
					Nickel compounds	0.00267	0.0117	0.0117	
					Nitrobenzene	6.82e-06	2.99e-05	2.99e-05	
					Nitrogen Oxides	31.35	51.73	51.73	
					Particulate Matter	1.88	1,011.31	8.23	
					PCBs (Polychlorinated biphenyls)	1.81e-06	7.94e-06	7.94e-06	
					Pentachlorophenol (PCP)	1.06e-05	4.63e-05	4.63e-05	
					Phenol	0.000417	0.00183	0.00183	
					Phosphorus	0.00675	0.0296	0.0296	
					PM < 2.5 micron	0.44	1,011.31	1.93	
					PM < 10 micron	0.44	1,011.31	1.93	
					Polycyclic organic matter	7e-05	0.000306	0.000306	
					Selenium compounds	1.31e-05	5.75e-05	5.75e-05	
					Sulfur Dioxide	3.28	56.67	14.34	

PTE by SI

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Incinerator	EQUI 35	EU001	South MSW Incinerator	Volatile Organic Compounds	0.42	1.83	1.83	
		EQUI 36	EU002	North MSW Incinerator	1,2,4-Trichlorobenzene	5.66e-06	2.48e-05	2.48e-05	
					1,4-Dichlorobenzene (para-)	8.24e-06	3.61e-05	3.61e-05	
					2,4-Dinitrotoluene	9.13e-06	4e-05	4e-05	
					2,4,6-Trichlorophenol	8.45e-06	3.7e-05	3.7e-05	
					Acetaldehyde	0.000192	0.000841	0.000841	
					Acrolein	0.000163	0.000714	0.000714	
					Antimony compounds	0.000308	0.00135	0.00135	
					Arsenic compounds	1.68e-05	7.35e-05	7.35e-05	
					Beryllium	8.21e-07	3.6e-06	3.6e-06	
					Bis(2-ethylhexyl) phthalate	3.7e-05	0.000162	0.000162	
					Cadmium compounds	0.0041	0.127	0.018	
					Carbon Dioxide Equivalent	9,375	41,063	41,063	
					Carbon Monoxide	3.92	27.9	17.16	
					Chromium compounds	0.000987	0.00433	0.00433	
					Cobalt compounds	2.8e-05	0.000123	0.000123	
					Dibenzofuran	2.38e-06	1.04e-05	1.04e-05	
					Dioxins and Furans	8.21e-07	3.6e-06	3.6e-06	
					Formaldehyde	0.000563	0.00246	0.00246	
					HAPs - Total	15.73	104.55	68.9	
					Hexachlorobenzene	5.39e-06	2.36e-05	2.36e-05	
					Hexachlorobutadiene	7.74e-06	3.39e-05	3.39e-05	
					Hexachlorocyclopentadiene	7.54e-06	3.3e-05	3.3e-05	
					Hexachloroethane	1.49e-05	6.53e-05	6.53e-05	
					Hydrofluoric acid	0.0166	0.0727	0.0727	
					Hydrogen Chloride	15.63	101.28	68.44	
					Isophorone	3.52e-06	1.54e-05	1.54e-05	
					Lead	0.0657	2.92	0.288	
					Manganese compounds	0.00483	0.0211	0.0211	
					Mercury	0.00168	0.0799	0.00737	
					Muni Waste Combust Organics	24.03	157.94	105.26	
					Naphthalene	3.2e-05	0.00014	0.00014	
					Nickel compounds	0.00267	0.0117	0.0117	
					Nitrobenzene	6.82e-06	2.99e-05	2.99e-05	
					Nitrogen Oxides	31.35	51.73	51.73	
					Particulate Matter	1.88	1,011.31	8.23	
					PCBs (Polychlorinated biphenyls)	1.81e-06	7.94e-06	7.94e-06	
					Pentachlorophenol (PCP)	1.06e-05	4.63e-05	4.63e-05	
					Phenol	0.000417	0.00183	0.00183	
					Phosphorus	0.00675	0.0296	0.0296	
					PM < 2.5 micron	0.44	1,011.31	1.93	
					PM < 10 micron	0.44	1,011.31	1.93	
					Polycyclic organic matter	7e-05	0.000306	0.000306	
					Selenium compounds	1.31e-05	5.75e-05	5.75e-05	
					Sulfur Dioxide	8.41	56.67	36.82	
					Volatile Organic Compounds	0.42	1.83	1.83	
Fugitive	Paved Road	FUGI 1	FS002	Traffic and Paved Roads	Particulate Matter	0.06	0.27	0.27	
					PM < 2.5 micron	0.003	0.01	0.01	
					PM < 10 micron	0.01	0.05	0.05	

Relationships

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Relationship	Related SI ID	% Flow	Related SI Type	Related Delta Designation	Relationship Start Date	Relationship End Date	
Equipment	Boiler	EQUI 33	EU005	Auxiliary Boiler w/ FGR and low NOx burners	is controlled by	TREA 8	0	026-Flue Gas Recirculation	Null	4/28/2026	Null	
						TREA 9	100	205-Low Nox Burners	Null	4/28/2026	Null	
					is monitored by	EQUI 25	Null	Parametric Monitor	MR015	4/7/2026	Null	
					sends to	STRU 4	100	Stack/Vent	SV004	4/28/2004	Null	
	Data Acquisition System	EQUI 7	DA001	DAS	receives from	EQUI 9	Null	Continuous Emission Monitor	MR019	4/7/2026	Null	
						EQUI 10	Null	Continuous Emission Monitor	MR019	4/7/2026	Null	
						EQUI 11	Null	Continuous Emission Monitor	MR019	4/7/2026	Null	
						EQUI 14	Null	Continuous Emission Monitor	MR022	4/7/2026	Null	
						EQUI 15	Null	Continuous Opacity Monitor	MR023	4/7/2026	Null	
						EQUI 17	Null	Continuous Emission Monitor	MR002	4/7/2026	Null	
						EQUI 19	Null	Continuous Emission Monitor	MR004	4/7/2026	Null	
						EQUI 31	Null	Continuous Emission Monitor	MR016	4/7/2026	Null	
						EQUI 41	Null	Continuous Emission Monitor	MR016	4/7/2026	Null	
						EQUI 42	Null	Continuous Emission Monitor	MR016	4/7/2026	Null	
						EQUI 44	Null	Continuous Opacity Monitor	Null	4/7/2026	Null	
	Incinerator	EQUI 35	EU001	South MSW Incinerator	is controlled by	TREA 4	0	016-Fabric Filter - High Temp, T>250 Degrees F	CE004	4/18/2013	Null	
						TREA 5	0	041-Dry Limestone Injection	CE005	4/18/2013	Null	
						TREA 6	100	048-Activated Carbon Adsorption	CE006	4/18/2013	Null	
					is monitored by	EQUI 9	Null	Continuous Emission Monitor	MR019	3/3/2026	Null	
						EQUI 10	Null	Continuous Emission Monitor	MR019	3/3/2026	Null	
						EQUI 11	Null	Continuous Emission Monitor	MR019	3/3/2026	Null	
						EQUI 12	Null	Parametric Monitor	MR020	3/3/2026	Null	
						EQUI 14	Null	Continuous Emission Monitor	MR022	3/3/2026	Null	
						EQUI 15	Null	Continuous Opacity Monitor	MR023	3/3/2026	Null	
						EQUI 17	Null	Continuous Emission Monitor	MR002	3/3/2026	Null	
						EQUI 19	Null	Continuous Emission Monitor	MR004	3/3/2026	Null	
						EQUI 21	Null	Parametric Monitor	MR008	3/3/2026	Null	
						EQUI 27	Null	Parametric Monitor	MR006	3/3/2026	Null	
						EQUI 28	Null	Parametric Monitor	MR010	3/3/2026	Null	
					sends to	EQUI 7	Null	Data Acquisition System	DA001	4/18/2013	Null	
						STRU 2	0	Stack/Vent	SV002	4/28/2004	Null	
						STRU 5	100	Stack/Vent	SV009	4/18/2013	Null	
		EQUI 36	EU002	North MSW Incinerator	is controlled by	TREA 1	0	016-Fabric Filter - High Temp, T>250 Degrees F	CE001	5/16/2000	Null	
						TREA 2	0	041-Dry Limestone Injection	CE002	4/18/2013	Null	
						TREA 3	100	048-Activated Carbon Adsorption	CE003	4/18/2013	Null	
					is monitored by	EQUI 20	Null	Parametric Monitor	MR007	3/3/2026	Null	
						EQUI 26	Null	Parametric Monitor	MR005	3/3/2026	Null	
						EQUI 29	Null	Parametric Monitor	MR011	3/3/2026	Null	
						EQUI 31	Null	Continuous Emission Monitor	MR016	3/3/2026	Null	

Relationships

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Relationship	Related SI ID	% Flow	Related SI Type	Related Delta Designation	Relationship Start Date	Relationship End Date	
Equipment	Incinerator	EQUI 36	EU002	North MSW Incinerator	is monitored by	EQUI 32	Null	Parametric Monitor	MR017	3/3/2026	Null	
						EQUI 41	Null	Continuous Emission Monitor	MR016	4/7/2026	Null	
						EQUI 42	Null	Continuous Emission Monitor	MR016	4/7/2026	Null	
						EQUI 44	Null	Continuous Opacity Monitor	Null	4/7/2026	Null	
					sends to	EQUI 7	Null	Data Acquisition System	DA001	4/18/2013	Null	
						STRU 3	0	Stack/Vent	SV003	4/28/2004	Null	
						STRU 5	100	Stack/Vent	SV009	4/18/2013	Null	
Treatment	016-Fabric Filter - High Temp, T>250 Degrees F	TREA 1	CE001	Fabric Filter - High Temperature, i.e., T>250 Degrees F	is monitored by	EQUI 8	Null	Parametric Monitor	MR018	3/3/2026	Null	
						EQUI 30	Null	Parametric Monitor	MR013	3/3/2026	Null	
					sends to	EQUI 7	Null	Data Acquisition System	DA001	3/3/2026	Null	
		TREA 4	CE004	Fabric Filter - High Temperature, i.e., T>250 Degrees F	is monitored by	EQUI 13	Null	Parametric Monitor	MR021	3/3/2026	Null	
						EQUI 43	Null	Parametric Monitor	Null	4/7/2026	Null	
					sends to	EQUI 7	Null	Data Acquisition System	DA001	3/3/2026	Null	
	048-Activated Carbon Adsorption	TREA 3	CE003	Activated Carbon Adsorption	is controlled in series by	TREA 1	100	016-Fabric Filter - High Temp, T>250 Degrees F	CE001	4/18/2013	Null	
						TREA 2	100	041-Dry Limestone Injection	CE002	4/18/2013	Null	
		TREA 6	CE006	Activated Carbon Adsorption	is controlled in series by	TREA 4	100	016-Fabric Filter - High Temp, T>250 Degrees F	CE004	4/18/2013	Null	
						TREA 5	100	041-Dry Limestone Injection	CE005	4/18/2013	Null	
	205-Low Nox Burners	TREA 9	Null	Low NOx burners	is controlled in series by	TREA 8	100	026-Flue Gas Recirculation	Null	4/28/2026	Null	

CEMs

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter	Primary or Backup?	Bypass Capability?	Install Date (CEMs/COMs)	Certification Date	Certification Basis	Span (ppm)	System Full Scale Value (ppm)	
EQUI 9	MR019	South Unit O2/CO/SO2 Monitor - O2	Horiba	CAM-ECU88L2	1DR3E6DW	Oxygen	Primary	Yes	9/14/2014	11/1/2015	40 CFR Pt 60	0	25	
EQUI 10	MR019	South Unit O2/CO/SO2 Monitor - CO	Horiba	CAM-ECU88L2	K30T974R	Carbon Monoxide	Primary	Yes	9/14/2014	11/1/2015	40 CFR Pt 60	0	2,000	
EQUI 11	MR019	South Unit O2/CO/SO2 Monitor - SO2	Horiba	CAM-ECU88L2	K30T974R	Sulfur Dioxide	Primary	Yes	9/14/2014	11/1/2015	40 CFR Pt 60	0	300	
EQUI 14	MR022	South Unit NOx Monitor	Horiba	CAM-ECU88L2	K30T974R	Nitrogen Oxides	Primary	Yes	9/14/2014	11/1/2015	40 CFR Pt 60	0	500	
EQUI 17	MR002	South Unit inlet O2/SO2 - O2	Horiba	CMA-EU-64L1	1dr3e6sw	Oxygen	Primary	Yes	9/1/2002	5/1/2004	40 CFR Pt 60	0	25	
EQUI 19	MR004	South Unit inlet O2/SO2 - SO2	Horiba	CMA-EU64L1	1dr3e6w	Sulfur Dioxide	Primary	Yes	9/1/2002	5/1/2004	40 CFR Pt 60	0	500	
EQUI 31	MR016	North Unit O2/CO/SO2 Monitor - O2	Horiba	ENDA-E4345	420342700	Oxygen	Primary	Yes	9/1/2002	10/12/2002	40 CFR Pt 60	16	22	
EQUI 41	MR016	North Unit O2/CO/SO2 Monitor - CO	Horiba	Enda-4000	p 1693	Carbon Monoxide	Primary	Yes	9/1/2002	10/12/2002	40 CFR Pt 60	0	2,000	
EQUI 42	MR016	North Unit O2/CO/SO2 Monitor - SO2	Horiba	Enda-4000	p 1693	Sulfur Dioxide	Primary	Yes	9/1/2002	10/12/2002	40 CFR Pt 60	0	2,000	

COMs

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter	Primary or Backup?	Bypass Capability?	Install Date (CEMs/COMs)	Certification Date	Certification Basis	Optical Path Length	
EQUI 15	MR023	South Unit Opacity	Durag	DR-290	1236274	Opacity	Primary	Yes	9/14/2014	10/1/2015	40 CFR Pt 60	0.52	
EQUI 44	Null	North Unit Opacity	Durag	DR-290 g2	1317252	Opacity	Primary	Yes	9/26/2023	9/26/2023	40 CFR Pt 60	0.48	

PMs

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter Monitored	Bypass Capability? (parametric)	Install Date (parametric)	
EQUI 8	MR018	Baghouse Pressure Drop - TREA 1	Dwyer	Photohelic	NA	Pressure Drop	No	9/1/2002	
EQUI 12	MR020	South Unit Steam Flow	Rosemount	3051CD	NA	Steam Flow	No	1/1/2014	
EQUI 13	MR021	Baghouse Pressure Drop - TREA 4	Turbo	ERCP	NA	Pressure Drop	No	1/1/2014	
EQUI 20	MR007	North Unit Temperature - Secondary	Thermowell	Type K	18JC-24	Temperature	No	1/1/2001	
EQUI 21	MR008	South Unit Temperature - Secondary	Thermowell	Type K	18JC-24	Temperature	No	1/1/2001	
EQUI 25	MR015	Boiler Pressure	Rosemount	115/6P8283	07299306	Pressure Drop	No	1/1/2001	
EQUI 26	MR005	North Unit Temperature - Primary	MikRon	Infared	MG75	Temperature	No	1/1/2001	
EQUI 27	MR006	South Unit Temperature - Primary	MikRon	Infared	MG75	Temperature	No	1/1/2001	
EQUI 28	MR010	South Unit Pressure	Yokogawa	EJA110A	86-54892-3-1	Pressure Drop	No	1/1/2001	
EQUI 29	MR011	North Unit Pressure	Yokogawa	EJA110A	86-54892-3-2	Pressure Drop	No	1/1/2001	
EQUI 30	MR013	Baghouse Inlet Temp - TREA 1	Thermowell	Type K	NA	Temperature	Yes	1/1/2001	
EQUI 32	MR017	North Unit Steam Flow	Yokogawa	DYA	NA	Steam Flow	No	9/1/2002	
EQUI 43	Null	Baghouse Inlet Temp - TREA 4	Thermowell	Type K	NA	Temperature	No	1/1/2014	

DAS

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Primary or Backup? (DASs)	Install Date (DASs)	
EQUI 7	DA001	DAS	Nexus	CEMDAS/CEMDATA1	SQLSRV32DLL	Primary	8/7/2014	

FUGI

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item Type	Subject Item ID	Delta Designation	Description	Install Year	Pollutants Emitted	
Paved Road	FUGI 1	FS002	Traffic and Paved Roads	2002	Particulate Matter	
					PM < 2.5 micron	
					PM < 10 micron	

Building

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item ID	Delta Designation	Description	Height	Units (height)	Length	Units (length)	Width	Units (width)	
STRU 10	Null	B2T1	51.74	feet	18.7	feet	17.39	feet	
STRU 11	Null	B1T1 - 1st tier	25	feet	180.1	feet	160.7	feet	
STRU 12	Null	B1T1 - 2nd tier	58.5	feet	147.6	feet	98.7	feet	
STRU 13	Null	BLD 3	37	feet	303	feet	151.5	feet	
STRU 14	Null	BLD 4	20	feet	54.1	feet	36	feet	

Stack/Vents

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item ID	Delta Designation	Description	Stack Height (feet)	Stack Diameter (feet)	Stack Length (feet)	Stack Width (feet)	Stack Flow Rate (cubic ft/min)	Discharge Temperature (°F)	Flow Rate/Temp Information Source	Discharge Direction	
STRU 2	SV002	South Unit Dump Stack - EQUI 35	65	5	Null	Null	40,800	1,800	Estimate	Upwards with no cap on stack/vent	
STRU 3	SV003	North Unit Dump Stack - EQUI 36	65	5	Null	Null	40,800	1,800	Estimate	Upwards with no cap on stack/vent	
STRU 4	SV004	Auxiliary Boiler Stack	89	4	Null	Null	22,780	220	Estimate	Upwards with no cap on stack/vent	
STRU 5	SV009	Combined MWC Stack	125	5	Null	Null	62,499	325	Estimate	Upwards with no cap on stack/vent	
STRU 6	SV005	Roof Exhauster Fan	56.8	5	Null	Null	15,000	68	Manufacturer	Upwards with a cap on stack/vent	
STRU 7	SV006	Roof Exhauster Fan	56.8	5	Null	Null	15,000	68	Manufacturer	Upwards with a cap on stack/vent	
STRU 8	SV007	Roof Exhauster Fan	57	5	Null	Null	15,000	68	Manufacturer	Upwards with a cap on stack/vent	
STRU 9	SV008	Roof Exhauster Fan	57	5	Null	Null	15,000	68	Manufacturer	Upwards with a cap on stack/vent	

Other Controls

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item Type	Subject Item ID	Delta Designation	Description	Manufacturer (Model #)	Installation Start Date	Pollutants Controlled	Capture Efficiency (%)	Destruction/ Collect Efficiency (%)	Subject to CAM?	Large or Other PSEU?	Efficiency Basis	Other Basis Explanation	Other operating parameters?	Other operating parameters description	
026-Flue Gas Recirculation	TREA 8	Null	Flue Gas Recirculation	Victoria Energy (manual control damper)	1/25/2006	Nitrogen Oxides	100	68	No	Null	Other	Ap-42 emission factor estimates	No	Null	
048-Activated Carbon Adsorption	TREA 3	CE003	Activated Carbon Adsorption	MDS (act 50)	11/25/2014	Mercury	100	85	No	Null	Other	permit limits	Yes	additive feed rate	
						Muni Waste Combust Organics	100	50	No	Null	Other	permit limits	Yes	additive feed rate	
	TREA 6	CE006	Activated Carbon Adsorption	MDS (act 50)	8/20/2015	Mercury	100	85	No	Null	Other	permit limits	Yes	additive feed rate	
						Muni Waste Combust Organics	100	50	No	Null	Other	permit limits	Yes	additive feed rate	
205-Low Nox Burners	TREA 9	Null	Low NOx burners	Hamworthy Peabody (MSC 535)	1/25/2006	Nitrogen Oxides	100	68	No	Null	Other	Ap-42 emission factor estimates	No	Null	

Fabric Filters

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item Type	Subject Item ID	Delta Designation	Description	Manufacturer (Model #)	Installation Start Date	Pollutants Controlled	Capture Efficiency (%)	Destruction/ Collect Efficiency (%)	Subject to CAM?	Large or Other PSEU?	Efficiency Basis	Other Basis Explanation	Filter Min Pressure Drop (in. of w.c.)	Filter Max Pressure Drop (in. of w.c.)	Bag leak detector in use?	
016-Fabric Filter - High Temp, T>250 Degrees F	TREA 1	CE001	Fabric Filter - High Temperature, i.e., T>250 Degrees F	Wheelalorator (144-TA-5B Series 6p)	1/1/2001	Cadmium compounds	100	79	No	Null	Other	estimated based on performance testing	5	10	No	
						Lead	100	79	No	Null	Other	estimated based on performance testing	5	10	No	
						Particulate Matter	100	99	No	Null	Control Equipment Rule	Null	5	10	No	
						PM < 2.5 micron	100	93	No	Null	Other	based on control equipment rule	5	10	No	
						PM < 10 micron	100	93	No	Null	Control Equipment Rule	Null	5	10	No	
	TREA 4	CE004	Fabric Filter - High Temperature, i.e., T>250 Degrees F	Bold Eco Ecosorb (NA)	8/20/2015	Cadmium compounds	100	79	No	Null	Other	estimated based on performance testing	5	10	No	
						Lead	100	79	No	Null	Other	estimated based on performance testing	5	10	No	
						Particulate Matter	100	99	No	Null	Control Equipment Rule	Null	5	10	No	
						PM < 2.5 micron	100	93	No	Null	Other	based on control equipment rule	5	10	No	
						PM < 10 micron	100	93	No	Null	Control Equipment Rule	Null	5	10	No	

Injection Systems

AI ID (Name): 726 (Perham Resource Recovery Facility)
Activity: IND20170001

Subject Item Type	Subject Item ID	Delta Designation	Description	Manufacturer (Model #)	Installation Start Date	Pollutants Controlled	Capture Efficiency (%)	Destruction/ Collect Efficiency (%)	Subject to CAM?	Large or Other PSEU?	Efficiency Basis	Other Basis Explanation	Min Injection Rate (Units)	Max Injection Rate (Units)	Material Injected	
041-Dry Limestone Injection	TREA 2	CE002	Dry Limestone Injection	MAC Flotronics (J-801007)	1/1/2001	Hydrochloric acid	100	50	No	Null	Other	engineering judgement	126.67 (pounds per hour)	250 (pounds per hour)	Limestone, dry	
						Sulfur Dioxide	100	40	No	Null	Other	engineering judgement	126.67 (pounds per hour)	250 (pounds per hour)	Limestone, dry	
	TREA 5	CE005	Dry Limestone Injection	MAC Flotronics (J-801007)	1/1/2001	Hydrochloric acid	100	50	No	Null	Other	engineering judgement	142 (pounds per hour)	250 (pounds per hour)	Limestone, dry	
						Sulfur Dioxide	100	40	No	Null	Other	engineering judgement	142 (pounds per hour)	250 (pounds per hour)	Limestone, dry	

SI Id	Sequence	Requirement
TFAC 2	10	Ash Testing: Conduct ash sampling at least quarterly in accordance with Minn. R. 7035.2910 to form an annual composite sample. The Permittee shall analyze the annual composite sample in accordance with Minn. R. 7035.2910, subp. 4, item A, tables 1 and 2. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7000.7000, variance, (10/18/96), Minn. R. 7007.0801, subp. 2(D), Minn. R. 7035.2910, subp. 3]
	19	Monitoring Equipment: Install or make needed repairs to all monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued. [Minn. R. 7007.0800, subp. 4(D)]
	23	The Permittee must maintain records adequate to document compliance at the stationary source, including at a minimum: (1) the date, place, and time of sampling or measurement; (2) the date or dates the analyses were performed; (3) the company or entity that performed the analyses; (4) the analytical techniques or methods used; (5) the results of such analyses; and (6) the operating conditions existing at the time of sampling or measurement. [Minn. R. 7007.0800, subp. 5(A)]
	39	The Permittee shall prepare and maintain a plan for the management of industrial solid wastes in accordance with Minn. R. 7035.2535, subp. 5, items A and B. The plan must also include the contents listed in Minn. R. 7011.1250, subp. 2 (listed below). The Permittee shall modify the industrial waste management plan whenever the management practices or solid wastes identified in the plan have changed. The Permittee shall submit the amended plan to the commissioner for approval. The industrial solid waste management plan must address how the following additional categories of solid waste will be managed to comply with the requirements of Minn. R. 7035.2535, subp. 5, item A, subitems (2) to (4), as well as state whether each of the following solid wastes will be accepted at the facility: A. spilled fossil fuels and the sorbents used to collect the spilled fossil fuels; B. infectious and pathological wastes; C. media contaminated with oil; D. problem materials as defined in Minnesota Statutes, section 115A.03, subdivision 24a; and E. any other solid wastes that can be identified that would adversely impact waste combustor operations or result in environmental and health problems if combusted. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7011.1250, subp. 1-3]
	41	Ash Toxicity: Abide by a plan to reduce the level of toxic contaminants in ash, consistent with Minn. R. 7007.0501, subp. 6(A). This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7007.0501, subp. 6]
	42	Abide by a plan for the disposal and/or utilization of ash and quench water consistent with Minn. R. 7007.0501, subp. 7. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7007.0501, subp. 7]
	43	Abide by the industrial waste management plan prepared in accordance with Minn. R. 7011.1250. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7007.0801, subp. 2(E)]

SI Id	Sequence	Requirement
	44	The Permittee shall design, construct, and operate the facility in compliance with the solid waste management requirements as set forth in items A to H. Plans required in the items in Minn. R. 7011.1245 shall identify those required portions of the plan which are not applicable. A. security requirements in Minn. R. 7035.2535, subp. 3; B. general inspection requirements in Minn. R. 7035.2535, subp. 4; C. household hazardous waste management requirements of Minn. R. 7035.2535, subp. 6, D. emergency preparedness and prevention plans and emergency procedures shall be prepared in accordance with Minn. R. 7035.2595 and 7035.2605. E. contingency action plans in Minn. R. 7035.2615; F. closure plans and procedures in Minn. R. 7035.2625; G. solid waste transfer facility requirements as required in Minn. R. 7035.2865; and H. infectious waste management plan (if Permittee chooses to accept infectious waste), in accordance with Minn. R. 7035.9100 to 7035.9150. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1245]
	45	Ash Testing Plan: Submit ash testing plan and amendments to the plan to the Commissioner for approval. The plan must contain the information in Minn. R. 7035.2910, subp. 6(A) - (H). This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7007.0801, subp. 2(D), Minn. R. 7035.2910, subp. 6]
	46	The Permittee must prepare and regularly update a plan to identify, separate, and collect before combustion of solid wastes which contain mercury. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7011.1255, subp. 1, Minn. R. 7011.1255, subp. 3]
	47	The Permittee shall implement a plan as described in Minn. R. 7011.1255 to identify, separate, and collect solid wastes which contain mercury before the mercury is combusted. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7007.0801, subp. 2(F)]
	48	QA Plan required: The Permittee must develop and implement a written quality assurance plan which covers each CEMS and COMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain the written procedures listed in Minn. R. 7017.1210, subp. 1. [Minn. R. 7017.1170, subp. 2, Minn. R. 7017.1210, subp. 1]
	49	Reporting: All submittals required by this permit must be certified by a responsible official as defined in Minn. R. 7007.0100, subp. 21. All submittals must be postmarked or received by the date specified in this permit. [Minn. R. 7007.0800, subp. 6(A), Minn. R. 7011.1285, subp. 1]
	50	Emergency Preparedness and Prevention: The Permittee shall maintain and test, at least annually, the required equipment for emergency preparedness and prevention. The Permittee must also prepare and maintain a procedural manual to use in times of emergency. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7035.2595]
	51	Emergency Response and Reporting: In the event of an emergency, including but not limited to fire or explosion, submit to MPCA within two weeks a written report describing the emergency, the response, and an evaluation of the effectiveness of the response in accordance with Minn. R. 7035.2995 and Minn. R. 7035.2605. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1245, Minn. R. 7035.2595, Minn. R. 7035.2605]
	52	HCl Performance Test Report: The Permittee must include the SO2 CEMS data recorded during the time of the performance test as an appendix to the test report. The Permittee must also include chlorine in the ultimate fuel analysis included as part of the Waste Composition Study. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7017.2017, Minn. R. 7017.2035, subp. 3]
	57	All incoming municipal solid waste shall be processed, except for instances when the Permittee has determined, by pre-approval, that a hauler's specific loads do not need to be processed. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	Requirement
	61	Processed Mixed Municipal Solid Waste: "Processed mixed municipal solid waste" shall be defined as mixed municipal solid waste, as provided in Minn. Stat. Section 115A.03, subdivision 21, which has been: 1) Evaluated by a trained inspector; and, 2) Any objectionable materials, as identified by a trained inspector, have been physically removed. [Minn. R. 7007.0800, subp. 2(A)]
	62	Objectionable Material: "Objectionable material" shall be defined as that material which is not conducive to the combustion process and has been set aside for further processing and/or alternative disposal rather than combustion. This definition includes materials that likely may contain mercury. Objectionable materials shall not be combusted. [Minn. R. 7007.0800, subp. 2(A)]
	65	Pre-approved Haulers: A trained inspector may allow pre-approved waste loads to bypass processing upon the following conditions: 1) The source of the particular load is known by the trained inspector to contain consistent waste materials and is not likely to contain any objectionable materials; 2) A trained inspector shall inspect an incoming load to verify that it is of a known consistency and is not likely to contain any objectionable materials; 3) At least annually, the trained inspector shall inspect an additional incoming load from that hauler to confirm that it remains a known, consistent waste load that is not likely to contain any objectionable materials; 4) The trained inspector shall record, at a minimum, the following information for each load which is inspected for either pre-approval or annual confirmation of approval: - the date of delivery; - the source of the delivery; - a reasonable estimate of the quantity of the delivery; and, - a description of the load material. 5) The inspection information shall be recorded and kept on-site and be available for inspection. [Minn. R. 7007.0800, subp. 4]
	66	Environmental Compliance Operating Manual: Within the existing Environmental Compliance Operating Manual required by this permit, the Permittee must include a definition for objectionable materials that have been identified, as well as specific criteria which shall be used to identify materials that may be added to the objectionable materials list. The Permittee must annually update the Environmental Compliance Operating Manual's objectionable material list, the pre-approved hauler list, and trained inspector list. [Minn. R. 7007.0800, subp. 5]
	67	Recordkeeping of Inspector Training: As part of the operating record, the identity of all personnel who received training to inspect unprocessed municipal solid waste for the presence of objectionable materials shall be recorded along with date and duration of the training. [Minn. R. 7007.0800, subp. 5]
	68	Minn. R. 7011.1201-1285 are state-only requirements for this permit and are not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7011.0010, subp. 1]

SI Id	Sequence	Requirement
	70	Permit Appendices: This permit contains appendices as listed in the permit Table of Contents. The Permittee shall comply with all requirements contained in Appendices. Appendix F, G, and I are the most up-to-date versions as of permit issuance and are listed in this permit for reference. The Permittee must comply with all current plans approved by the commissioner. A. Insignificant activities and general applicable requirements; B. NOX and PM2.5 Modeling Parameters for Permit Number 11100036-004; C. 40 CFR pt. 60, Subpart A - General Provisions; D. 40 CFR pt. 63, Subpart A - General Provisions; E. 40 CFR pt. 63, Subpart DDDDD-National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters; F. Industrial Solid Waste Management Plan; G. Ash Management Plan; H. Waste Composition Study; I. Mercury Waste Separation Plan; J. 1996 MSW Combustor Ash Testing Variance; and K. 1997 Perham Resource Recovery Facility (PRRF) Variance. Modeling parameters in Appendix B. NOX and PM2.5 Modeling Parameters for Permit Number 11100036-004 are included for reference only as described elsewhere in this permit. [Minn. R. 7007.0800, subp. 2(A) & (B)]
	71	Modeled Parameters for NOX and PM2.5: The parameters used in NOX and PM2.5 modeling for permit number 11100036-004 are listed in Appendix B of this permit. The parameters describe the operation of the facility at maximum permitted capacity. The purpose of listing the parameters in the appendix is to provide a benchmark for future changes. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	80	Equivalent or Better Dispersion (EBD) Modeling Triggers (Modeling Required) for PM2.5: Any changes that affect any modeled PM2.5 parameter or emission rate listed in Appendix B, or an addition to the information documented in Appendix B, trigger the EBD Remodeling Submittal requirement. This includes changes that do not require a permit amendment as well as changes that require any type of permit amendment. Changes made under the Administrative amendment process are excluded from this requirement. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	1240	Computer Dispersion Modeling Triggers for PM2.5: The Permittee must conduct a refined remodeling analysis if: (1) The EBD Modeling Submittal requirement was triggered but the Permittee chose not to or was not eligible to submit an EBD analysis; (2) The Permittee submitted an EBD analysis but the results of the EBD modeling analysis do not demonstrate equivalent or better dispersion characteristics or the submittal was not approved; or (3) the location of the ambient air boundary is being modified, unless the new boundary completely encompasses the original boundary. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	2080	The Permittee must comply with Minn. Stat. 116.385. The Permittee may not use trichloroethylene at its permitted facility including in any manufacturing, processing, or cleaning processes, except as described in Minn. Stat. 116.385, subd. 2(b) and 4. This is a state-only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7007.0100, subp. 7(X), Minn. Stat. 116.385]
	2090	PERMIT SHIELD: Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements. This permit shall not alter or affect the liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance. [Minn. R. 7007.1800(A)(2)]

SI Id	Sequence	Requirement
	2100	The Permittee must comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0090. Compliance must be demonstrated upon written request by the MPCA. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	2110	Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted. [Minn. R. 7011.0020]
	2120	The Permittee must at all times properly operate and maintain the facilities and systems of treatment and control and the appurtenances related to them that are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. [Minn. R. 7007.0800, subp. 16(J)]
	2130	Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 16(J)]
	3340	Operation Changes: In any shutdown, breakdown, or deviation the Permittee must immediately or as soon as possible considering plant and personnel safety take all practical steps to modify operations to reduce the emission of any regulated air pollutant. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment are permitted to operate. [Minn. R. 7019.1000, subp. 4]
	7400	Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150. [Minn. R. 7011.0150]
	7420	Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7030.0010-7030.0080]
	7450	Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A). [Minn. R. 7007.0800, subp. 9(A)]
	7540	The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16. [Minn. R. 7007.0800, subp. 16]
	7550	Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in this permit. [Minn. R. ch. 7017]
	7560	Performance Test Notifications and Submittals: Performance Test Notification and Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due seven days before each Performance Test Performance Test Report: due 45 days after each Performance Test The Notification, Test Plan, and Test Report must be submitted in a format specified by the commissioner. [Minn. R. 7017.2017, Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2]
	7580	Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's follow up compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change. [Minn. R. 7017.2025, subp. 3]

SI Id	Sequence	Requirement
	7590	Monitoring Equipment Calibration - The Permittee shall either: 1. Calibrate or replace required monitoring equipment every 12 months; or 2. Calibrate at the frequency stated in the manufacturer's specifications. For each monitor, the Permittee shall maintain a record of all calibrations, including the date conducted, and any corrective action that resulted. The Permittee shall include the calibration frequencies, procedures, and manufacturer's specifications (if applicable) in the Operations and Maintenance Plan. Any requirements applying to continuous emission monitors are listed separately in this permit. [Minn. R. 7007.0800, subp. 4(D)]
	7600	Operation of Monitoring Equipment: Unless noted elsewhere in this permit, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system. [Minn. R. 7007.0800, subp. 4(D)]
	7610	Recordkeeping: Retain all records at the stationary source, unless otherwise specified within this permit, for five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A). [Minn. R. 7007.0800, subp. 5(C)]
	7620	Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2), including records of the emissions resulting from those changes. [Minn. R. 7007.0800, subp. 5(B)]
	7630	If the Permittee determines that no permit amendment or notification is required prior to making a change, the Permittee must retain records of all calculations required under Minn. R. 7007.1200. For expiring permits, these records shall be kept for a period of five years from the date the change was made or until permit reissuance, whichever is longer. The records shall be kept at the stationary source for the current calendar year of operation and may be kept at the stationary source or office of the stationary source for all other years. The records may be maintained in either electronic or paper format. [Minn. R. 7007.1200, subp. 4]
	7640	These following 40 CFR 52.21(r)(6) requirements apply if a reasonable possibility (RP) as defined in 40 CFR 52.21(r)(6)(vi) exists that a proposed project, analyzed using the actual-to-projected-actual (ATPA) test (either by itself or as part of the hybrid test at 40 CFR 52.21(a)(2)(iv)(f)) and found to not be part of a major modification, may result in a significant emissions increase (SEI). If the ATPA test is not used for the project, or if there is no RP that the proposed project could result in a SEI, these requirements do not apply to that project. The Permittee is only subject to the Preconstruction Documentation requirement for a project where a RP occurs only within the meaning of 40 CFR 52.21(r)(6)(vi)(b). Even though a particular modification is not subject to New Source Review (NSR), or where there isn't a RP that a proposed project could result in a SEI, a permit amendment, recordkeeping, or notification may still be required by Minn. R. 7007.1150 - 7007.1500. [Minn. R. 7007.0800, subp. 2(A), Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]

SI Id	Sequence	Requirement
		Preconstruction Documentation -- Before beginning actual construction on a project, the Permittee shall document the following: 1. Project description 2. Identification of any emission unit whose emissions of an NSR pollutant could be affected 3. Pre-change potential emissions of any affected existing emission unit, and the projected post-change potential emissions of any affected existing or new emission unit. 4. A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded due to increases not associated with the modification and that the emission unit could have accommodated during the baseline period, an explanation of why the amounts were excluded, and any creditable contemporaneous increases and decreases that were considered in the determination. The Permittee shall maintain records of this documentation. [Minn. R. 7007.0800, subps. 4-5, Minn. R. 7007.1200, subp. 4, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
	7650	Post-change Emissions - The Permittee shall monitor the actual emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using the ATPA test, and the potential emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using potential emissions in the hybrid test. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if the hybrid test was used in the analysis) emissions of the regulated pollutant, in tons per year on a calendar year basis, for a period of five years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit of any unit associated with the project. [Minn. R. 7007.0800, subps. 4-5, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
	7660	The Permittee must submit a report to the Agency if the annual summed (actual, plus potential if used in hybrid test) emissions differ from the preconstruction projection and exceed the baseline actual emissions by a significant amount as listed at 40 CFR 52.21(b)(23). Such report shall be submitted to the Agency within 60 days after the end of the year in which the exceedances occur. The report shall contain: a. The name and ID number of the Facility, and the name and telephone number of the Facility contact person; b. The annual emissions identified in the Post-change Emissions requirement (above); and c. Any other information, such as an explanation as to why the summed emissions differ from the preconstruction projection. [Minn. R. 7007.0800, subps. 4-5, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
	7670	Shutdown Notifications: Notify the commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the Permittee does not have advance knowledge of the shutdown, the Permittee must notify the commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator must inform the commissioner of the cause of the shutdown and the estimated duration. The owner or operator must notify the commissioner when the shutdown is over. [Minn. R. 7019.1000, subp. 3]
	7680	Breakdown Notifications: Notify the commissioner within 24 hours of a breakdown of more than one hour of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the Permittee must inform the commissioner of the cause of the breakdown and the estimated duration. The Permittee must notify the commissioner when the breakdown is over. [Minn. R. 7019.1000, subp. 2]

SI Id	Sequence	Requirement
	7690	Notification of Deviations Endangering Human Health or the Environment: Immediately after discovery of the deviation or immediately after when the deviation reasonably should have been discovered, notify the commissioner either orally or by e-mail, or telephone the state duty officer at 800-422-0798 or 651-649-5451, of any deviation from permit conditions that could endanger human health or the environment. [Minn. R. 7019.1000, subp. 1]
	7700	Notification of Deviations Endangering Human Health or the Environment Report: Within two working days of discovery, notify the commissioner in writing of any deviation from permit conditions that could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation. [Minn. R. 7019.1000, subp. 1]
	7720	Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed. Upon adoption of a new or amended federal applicable requirement, and if there are three or more years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150 - 7007.1500]
	7730	Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H). Performance testing deadlines from the General Provisions of 40 CFR pt. 60 and pt. 63 are examples of deadlines for which the MPCA does not have authority to grant extensions and therefore do not meet the requirements of Minn. R. 7007.1400, subp. 1(H). [Minn. R. 7007.1400, subp. 1(H)]
	7770	Within 15 days of a request from the Commissioner, the Permittee must provide a complete summary of all performance tests required at the facility including the subject item, pollutant, most recent test date (if applicable), and the date of the next test in an approved format. [Minn. R. 7007.0800, subp. 16(L)]
	7780	Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance. Submit in a format specified by the Commissioner. [Minn. R. 7019.3000-7019.3100]
	7790	Emission Fees: due 30 days after receipt of an MPCA bill. [Minn. R. 7002.0005-7002.0085]

SI Id	Sequence	Requirement
	7800	Ash Testing Report: The Permittee must submit an annual ash testing report to the Commissioner by March 15 of each year. The report must include the following information: A. Results of annual analyses of ash as required by Minn. R. 7035.2910. Total composition results must be reported on a dry weight basis. B. Discussion of the data, including identification of trends observed by comparing the most recent year's results with those of previous years. In particular, the Permittee must assess whether the waste combustor is in compliance with the goals of Minnesota Statutes, section 115A.97, subdivision 1, clause (1). C. Data quality assurance assessment, including the following: (1) precision and accuracy of each method used; (2) representativeness of the samples; (3) potential effect of any field or laboratory contamination on the sampling results; and (4) qualification or rejection of data based on the results of quality control samples. D. Information summarizing operation of the waste combustor(s) (EQUIs 1 and 19) during the ash sampling periods, and data regarding ash sample processing recorded according to Minn. R. 7035.2910, subp. 9. Operating information must include an estimate of the quantity and type of wastes other than mixed municipal solid waste which were combusted at the facility during the ash sampling period. If leachate was added to the waste during the sampling period, the quantity of leachate added and source of the leachate must be noted. E. Certification by the Permittee that samples analyzed to fulfill the requirements of Minn. R. 7035.2910 were collected according to the plan required by Minn. R. 7035.2910, subp. 6, and that no actions were taken during the sample collection period to intentionally affect the results of ash sample analysis so that the results would not be representative of ash typically generated by the waste combustor(s). Such actions may include, for example, altering the type of waste combusted during the sampling period. F. Identification of any changes in test methods or parameters made in accordance with Minn. R. 7035.2910, subp. 4, items D and E. [Minn. R. 7007.0801, subp. 2(D), Minn. R. 7035.2910, subp. 10]

SI Id	Sequence	Requirement
	7810	Waste Composition Study: due before 04/17/2028 and at end of each calendar five years after. The Permittee shall submit the waste composition study 45 days after completion of the study. The waste composition study must consist of the results of an analysis of the solid wastes or mixtures of solid wastes to be combusted, which uses the sampling methods prescribed in "Test Methods for Evaluating Solid Waste," SW-846, or any other sampling method approved in writing by the commissioner. The commissioner shall approve a sampling method where the commissioner determines that the precision and accuracy of the method are equivalent to that of the method set forth in "Test Methods for Evaluating Solid Waste," SW-846. The study shall include all of the analyses in subitems (1) to (4): (1) A fractional analysis of the solid waste, including percentage by weight of combustible and noncombustible materials in the solid waste stream and a solid waste sort that identifies, at a minimum, the percent by weight of paper, cardboard, plastic, ferrous and nonferrous metals, solid wastes which contain mercury, glass, organic, and inorganic material in the solid waste stream. The fractional analysis shall identify recyclable and problem materials. (2) A proximate analysis of the solid waste, which shall include the percentage of volatile matter, moisture content, ash content, and fixed carbon by difference. Analysis methods used to determine the proximate analysis of the solid waste shall be performed in accordance with ASTM methods E897, E790, and E830 for volatile matter, moisture content, and ash content, respectively. (3) An ultimate analysis of the solid waste, which shall include the percentage of carbon, hydrogen, nitrogen, oxygen, sulfur, chlorine, and oxygen by difference. Analysis methods used to determine the ultimate analysis of the solid waste shall be performed in accordance with ASTM methods E777, E778, E775, and E776 for carbon and hydrogen, nitrogen, sulfur, and chlorine, respectively. (4) The heat value of the solid waste. Analysis methods used to determine the heat value of the solid waste shall be performed in accordance with either ASTM E955 or any other analysis method approved in writing by the commissioner. The commissioner shall approve an analysis method where the commissioner determines precision and accuracy of the method are equivalent to that of the methods set forth in ASTM E955. [Minn. R. 7007.0501, subp. 2(A), Minn. R. 7011.1270, subp. 3(E)]
	7820	By Feb. 1 of each calendar year, the Permittee must submit an updated plan to separate solid wastes which contain mercury to the Commissioner, for the facility. The updated plan must identify improvements that have been made to the plan to increase identification, separation, and collection before combustion of mercury from the solid waste stream. If no changes are being made, the Permittee must state that no changes are being made for that year. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1255, subp. 1, Minn. R. 7011.1255, subp. 3]
	7830	EBD Modeling Submittal for PM2.5: For changes meeting the criteria in the EBD Modeling Triggers (Modeling Required) requirement, the Permittee may submit an EBD analysis using form AQDM-08. To use an EBD analysis to demonstrate compliance, the baseline modeling (the most recent approved refined modeling demonstration) must be valid as defined in the current version of the MPCA modeling practices manual. The results of the analysis must demonstrate that the proposed change is equivalent or better than the baseline model. When an EBD is submitted for a change, the Permittee must wait for written approval before making the change. When approval is received, construction may begin according to the applicable Minnesota Rules. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	7840	Computer Dispersion Modeling Protocol for PM2.5: If the requirement to conduct Computer Dispersion Remodeling is triggered, the Permittee must submit a computer dispersion modeling protocol for the total facility including the proposed change. This protocol will describe the proposed modeling methodology and input data, in accordance with the current version of the MPCA modeling practices manual. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]

SI Id	Sequence	Requirement
	7860	Computer Dispersion Modeling Results for PM2.5: Once approval of the Computer Dispersion Modeling Protocol is received, the Permittee must submit a Computer Dispersion Modeling Report in accordance with the current version of the MPCA modeling practices manual and the approved Computer Dispersion Modeling Protocol. The Report must be included with the permit application when an application is required for the proposed change. When a modeling report is required for a change, the Permittee must wait for written approval before making the change. When approval is received, construction may begin according to the applicable Minnesota Rules. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	7870	The Permittee shall submit excess emission/downtime report : Due by 30 days after the end of each calendar quarter following permit issuance. Submit this on form DRF-1 (Excess Emissions Reporting) as amended. The EER shall indicate all periods of monitor bypass and exceedances of the limit including those allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions, as well as a summary of audit results and frequencies. If no excess emissions, downtime or bypasses occurred during the quarter, submit a signed report supplying the necessary monitor data needed to verify this. [Minn. R. 7017.1110, subp. 1-2]
	7890	The Permittee must submit a semiannual deviations report : Due semiannually, by the 30th of January and July. The first semiannual report submitted by the Permittee must cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. Submit this on form DRF-2 (Deviation Reporting Form). If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(B)(2)]
	7900	The Permittee must submit a compliance certification : Due annually, by the 31st of January (for the previous calendar year). Submit this on form CR-04 (Annual Compliance Certification Report). This report covers all deviations experienced during the calendar year. If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(D)]
	7910	The Permittee shall submit an application for permit reissuance : Due 180 calendar days before Permit Expiration Date. [Minn. R. 7007.0400, subp. 2]
COMG 3	2230	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]
	2260	Sulfur Dioxide: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 35. [40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1260, Minn. R. 7011.1293, Minn. R. 7017.1010, subp. 1]
	2270	Sulfur Dioxide: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 36. [40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1260, Minn. R. 7011.1295, Minn. R. 7017.1010, subp. 1]
	2280	Carbon Monoxide: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 35. [40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1260, Minn. R. 7011.1293, Minn. R. 7017.1010, subp. 1]
	2290	Carbon Monoxide: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 36. [40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1260, Minn. R. 7011.1295, Minn. R. 7017.1010, subp. 1]
	2300	Nitrogen Oxides: If the Permittee wishes to take credit for operation of the NOX CEMS, EQUI 14, for the purposes of reporting actual emissions for emission inventory, the Permittee must install, operate, calibrate, and maintain the NOX CEMS in accordance with the Minn. R. ch. 7017. The NOX CEMS must be calibrated prior to the generation of data that will be used in the annual emissions calculation. [Minn. R. 7007.0800, subp. 4]
	2310	Certification Test Plan due 30 days before Certification Test. Certification Test Pretest Meeting due seven days before Certification Test. Certification Test Report due 45 days after Certification Test. Notify the commissioner prior to making any planned change or if unforeseen, within two working days, when a monitor must be recertified as outlined in Minn. R. 7017.1050, subp. 2. Test plans and reports must be submitted in a format specified by the commissioner. [40 CFR 60.7(a)(5), Minn. R. 7017.1060, subp. 1-3, Minn. R. 7017.1080]

SI Id	Sequence	Requirement
	2320	Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [40 CFR 60.13(e), Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1090]
	2350	QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan must be on site and available for inspection within 30 days after monitor certification. The plan must contain all of the information required by 40 CFR Part 60, Appendix F, Section 3. The plan must include the manufacturer's spare parts list for each CEMS and require that those parts be kept at the facility unless the Commissioner gives written approval to exclude specific spare parts from the list. [40 CFR pt. 60, Appendix F, 3, Minn. R. 7017.1010, subp. 1(C), Minn. R. 7017.1170, subp. 2]
	2360	CEMS QA/QC: The Permittee is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each CEMS according to the QA/QC procedures in 40 CFR pt. 60, Appendix F as amended and maintain a written QA/QC program available in a form suitable for inspection. [40 CFR 60.13(a), 40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(A)]
	2650	CEMS Daily Calibration Drift Test: Check calibration drifts at least once daily. The zero and span must be adjusted as specified in the applicable 40 CFR pt. 60, Appendix B Performance Specification. 40 CFR pt. 60, Appendix F, Section 4.3.1 must be used to determine out-of-control periods for CEMS. [40 CFR 60.13(d)(1), 40 CFR pt. 60, Appendix F, 4.1, Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1170, subp. 3]
	2651	Recordkeeping: The Permittee shall retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [40 CFR 60.7(f), Minn. R. 7017.1130, Minn. R. 7019.0100, subp. 1]
	2652	CEMS Monitor Design: Each CEMS shall be designed to complete a minimum of one cycle of sampling, analyzing, and data recording in each 15-minute period. [40 CFR 60.13(e)(2), Minn. R. 7017.1010, subp. 1(A)]
	2653	The Permittee must submit start-up notification: Due 10 working days after Startup of Monitor Date. [Minn. R. 7007.0800, subp. 2(A)]
	2654	CEMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the CEMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [40 CFR 60.13(b), Minn. R. 7017.1010, subp. 1(A)]
	2655	Installation Notification: due 60 days before installing the continuous emissions monitoring system. The notification shall include plans and drawings of the system. [Minn. R. 7017.1040, subp. 1]
COMG 4	2660	Installation Notification: due 60 days before installing the continuous Opacity monitoring system. The notification shall include plans and drawings of the system. [Minn. R. 7017.1040, subp. 1]
	2680	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]
	2700	Emissions Monitoring: The owner or operator shall use a COMS to measure emissions from EQUI 35. [40 CFR pt. 60, subp. AAAA, Minn. R. 7011.1293, Minn. R. 7017.1010, subp 1]
	2720	Emissions Monitoring: The owner or operator shall use a COMS to measure emissions from EQUI 36. [40 CFR pt. 62, subp. JJJ, Minn. R. 7011.1295, Minn. R. 7017.1010, subp. 1]
	2730	Monitoring Data: All COMS data must be reduced to six-minute averages. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each six-minute period. [40 CFR 60.13(e)(1), 40 CFR 60.13(h)(2), Minn. R. 7017.1200, subp. 1-3]
	2740	Continuous Operation: COMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A COMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [40 CFR 60.13(e), Minn. R. 7017.1090]
	2750	QC Program: the facility owner or operator must conduct quality assurance and quality control as specified in Procedure 3 - Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources, 40 CFR Pt. 60, Appendix F. [Minn. R. 7017.1215]

SI Id	Sequence	Requirement
	2760	COMS Daily Calibration Drift Test: The Calibration Drift must be quantified and recorded at zero (low-level) and upscale (high-level) calibration drift at least once daily according to the procedures listed in 40 CFR 60.13(d)(2) and pt. 60, Appendix B, PS 1. The zero and upscale calibration levels must be determined using the span value specified in the applicable requirement. If the applicable requirement does not specify a span value, a span value of 60, 70, or 80 percent opacity must be used unless an alternative span value is approved by the commissioner. 40 CFR pt. 60, Appendix F must be used to determine out-of-control periods for COMS. [40 CFR 60.13(d)(1), Minn. R. 7017.1215]
	2780	COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed. [Minn. R. 7017.1220]
	2790	Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [Minn. R. 7017.1130]
	2830	Notification of Compliance Status: Due 30 days before performance test required by 40 CFR 60.8 if COMS data results will be used in lieu of 40 CFR, Part 60, Appendix A, Method 9 observation data to determine compliance with the opacity standard as allowed by 40 CFR 60.11(e)(5). [40 CFR 60.7(a)(7)]
	2840	COMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the COMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [Minn. R. 7017.1050, subp. 1]
	2841	The Permittee shall submit start-up notification: Due 10 working days after Startup of Monitor Date. The notification shall be submitted electronically on Form CS-02. [Minn. R. 7007.0800, subp. 2(A)]
EQUI 9	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 10	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 11	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 14	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. If the Permittee wishes to take credit for operation of the NOX CEMS for the purposes of reporting actual emissions for emission inventory, EQUI 14 must comply with the requirements of this permit during the time credit for operation is taken. [Minn. R. 7017.1180, subp. 3]

SI Id	Sequence	Requirement
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. If the Permittee wishes to take credit for operation of the NOX CEMS for the purposes of reporting actual emissions for emission inventory, EQUI 14 must comply with the requirements of this permit during the time credit for operation is taken. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. If the Permittee wishes to take credit for operation of the NOX CEMS for the purposes of reporting actual emissions for emission inventory, EQUI 14 must comply with the requirements of this permit during the time credit for operation is taken. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. If the Permittee wishes to take credit for operation of the NOX CEMS for the purposes of reporting actual emissions for emission inventory, EQUI 14 must comply with the requirements of this permit during the time credit for operation is taken. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 15	2850	The Permittee must conduct quarterly COMS performance audits: Due once per QA operating quarter (calendar quarter in which the unit operates at least 168 hours) after COMS certification test. Quarterly performance audits will include: optical alignment, calibration error, and zero compensation according to Procedure 3 of 40 CFR Pt. 60, Appendix F, section 10.0(2). Sources that achieve quality assured data for four consecutive quarters may reduce their auditing frequency to semi-annual. If a performance audit is failed, the source must resume quarterly testing for that audit requirement until it again demonstrates successful performance over four consecutive quarters. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
	2860	The Permittee must perform annual zero alignment as described in Procedure 3, section 10.3 of 40 CFR Pt. 60, Appendix F. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
EQUI 17	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. EQUI 17 O2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. However, if the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides emissions limit, EQUI 17 must comply with the requirements of this permit during the time credit for operation is taken. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. EQUI 17 O2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. However, if the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides emissions limit, EQUI 17 must comply with the requirements of this permit during the time credit for operation is taken. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. EQUI 17 O2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. However, if the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides emissions limit, EQUI 17 must comply with the requirements of this permit during the time credit for operation is taken. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]

SI Id	Sequence	Requirement
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. EQUI 17 O2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. However, if the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides emissions limit, EQUI 17 must comply with the requirements of this permit during the time credit for operation is taken. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 19	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. EQUI 19 SO2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. If the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides limit, EQUI 19 must comply with the requirements of this permit during the time credit for operation is taken. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. EQUI 19 SO2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. If the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides limit, EQUI 19 must comply with the requirements of this permit during the time credit for operation is taken. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. EQUI 19 SO2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. If the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides limit, EQUI 19 must comply with the requirements of this permit during the time credit for operation is taken. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. EQUI 19 SO2 inlet CEMS is not necessary in order to meet applicable SO2 emission concentration limit. If the Permittee wishes to take credit for operation of the SO2 inlet CEMS to meet the applicable 80% reduction of potential sulfur dioxides limit, EQUI 19 must comply with the requirements of this permit during the time credit for operation is taken. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 31	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 33	4825	Fuel type: Natural gas only, by design. [Minn. R. 7005.0100, subp. 35a]
	4830	Recordkeeping: By the last day of each calendar month, the Permittee shall record the amount of natural gas combusted in the boilers during the previous calendar month. These records shall consist of purchase records, receipts, or fuel meter readings. [40 CFR 60.48c(g), Minn. R. 7011.0570]

SI Id	Sequence	Requirement
	21090	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1(a)-(c); 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5(a)-(b); 40 CFR 60.6(a)-(b); 40 CFR 60.7(a)(1), (3)-(7); 40 CFR 60.7(b)-(d); 40 CFR 60.8(a)-(i); 40 CFR 60.9; 40 CFR 60.11(a)-(d); 40 CFR 60.11(e)(1)-(8); 40 CFR 60.11(f)-(g); 40 CFR 60.12; 40 CFR 60.13(a)-(c); 40 CFR 60.13(d)(1)-(2); 40 CFR 60.13(e)(1)-(2); 40 CFR 60.13(f)-(g); 40 CFR 60.13(h)(1)-(3); 40 CFR 60.13(i)(1)-(9); 40 CFR 60.13(j)(1)-(2); 40 CFR 60.14(a)-(l); 40 CFR 60.15(a)-(g); 40 CFR 60.17; 40 CFR 60.18(b)-(f); 40 CFR 60.18(g)-(i); 40 CFR 60.19(a)-(e); and 40 CFR 60.19(f)(1)-(4). A copy of 40 CFR pt. 60, subp. A is included in Appendix C. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. A, 40 CFR pt. 60, subp. Dc, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7011.0570, Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]

SI Id	Sequence	Requirement
	21230	The Permittee must comply with all applicable requirements of 40 CFR pt. 63, subp. DDDDD, as follows: 40 CFR 63.7480; 40 CFR 63.7485; 40 CFR 63.7490(a)(1); 40 CFR 63.7490(d); 40 CFR 63.7495(b); 40 CFR 63.7495(d); 40 CFR 63.7499(l); 40 CFR 63.7500(a); 40 CFR 63.7500(a)(1); 40 CFR 63.7500(a)(3); 40 CFR 63.7500(b); 40 CFR 63.7505(a); 40 CFR 63.7515(d), five year tune-up frequency; 40 CFR 63.7540(a); 40 CFR 63.7540(a)(10); 40 CFR 63.7540(a)(12), units with continuous oxygen trim systems; 40 CFR 63.7540(a)(13); 40 CFR 63.7540(b); 40 CFR 63.7545(a); 40 CFR 63.7545(f); 40 CFR 63.7545(h); 40 CFR 63.7550(a); 40 CFR 63.7550(b), five year tune-up frequency; 40 CFR 63.7550(c); 40 CFR 63.7550(c)(1); 40 CFR 63.7550(c)(5)(i)-(iii), (xiv), and (xvii); 40 CFR 63.7550(h)(3); 40 CFR 63.7555(a)(1); 40 CFR 63.7555(h); 40 CFR 63.7560; 40 CFR 63.7565; 40 CFR 63.7570; 40 CFR 63.7575; 40 CFR pt. 63, subp. DDDDD, Table 3, item 1 ; 40 CFR pt. 63, subp. DDDDD, Table 9; and 40 CFR pt. 63, subp. DDDDD, Table 10. A copy of 40 CFR pt. 63, subp. DDDDD is included in Appendix E. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 63, subp. DDDDD, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.7050]

SI Id	Sequence	Requirement
	35700	The Permittee must comply with all applicable requirements of 40 CFR pt. 63, subp. A as follows: 40 CFR 63.1 40 CFR 63.2; 40 CFR 63.3; 40 CFR 63.4; 40 CFR 63.5; 40 CFR 63.6(a); 40 CFR 63.6(b)(1)-(b)(5); 40 CFR 63.6(b)(7); 40 CFR 63.6(c); 40 CFR 63.6(f)(2) and (3); 40 CFR 63.6(g); 40 CFR 63.6(i); 40 CFR 63.6(j); 40 CFR 63.7(a)-(d); 40 CFR 63.7(e)(2)-(e)(9), (f), (g), and (h); 40 CFR 63.8(a) and (b); 40 CFR 63.8(c)(1), (c)(1)(ii), (c)(2)-(c)(9); 40 CFR 63.8(d)(1) and (2); 40 CFR 63.8(d)(3), except for the last sentence, which refers to a startup, shutdown, and malfunction plan. Startup, shutdown, and malfunction plans are not required; 40 CFR 63.8(e); 40 CFR 63.8(f); 40 CFR 63.8(g); 40 CFR 63.9; 40 CFR 63.10(a); 40 CFR 63.10(b)(1); 40 CFR 63.10(b)(2)(i); 40 CFR 63.10(b)(2)(iii); 40 CFR 63.10(b)(2)(vi); 40 CFR 63.10(b)(2)(vii)-(xiv); 40 CFR 63.10(c)(1)-(c)(9), (c)(12) and (13); 40 CFR 63.10(d)(1); 40 CFR 63.10(d)(2); 40 CFR 63.10(d)(4); 40 CFR 63.10(e); 40 CFR 63.10(f); 40 CFR 63.12; 40 CFR 63.13; 40 CFR 63.14; 40 CFR 63.15; and 40 CFR 63.16. A copy of 40 CFR pt. 63, subp. A is included in Appendix D. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 63.7565, 40 CFR pt. 63, subp. A, 40 CFR pt. 63, subp. DDDDD (Table 10), Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(B), Minn. R. 7011.7050, Minn. R. 7017.1010 & 7017.2015, subp. 3, Minn. R. 7019.0100]

SI Id	Sequence	Requirement
	35730	Compliance Report: the Permittee must submit a 5-year compliance report: Due January 31, 2031, and every 60 months thereafter. Each annual compliance report must cover the applicable 5-year period from January 1 to December 31 and must be postmarked or submitted no later than January 31. The Permittee must submit the Compliance Report electronically to the EPA via CEDRI using the appropriate electronic report in CEDRI for 40 CFR pt. 63, subp. DDDDD. [40 CFR 63.7550(a)-(b), 40 CFR 63.7550(c)(1), 40 CFR 63.7550(h)(3), 40 CFR pt. 63, subp. DDDDD(Table 9), Minn. R. 7011.7050]
	35780	The Permittee shall submit a notification of anticipated date for conducting opacity observations: Due 30 calendar days before Opacity Observation Date. [40 CFR 60.7(a)(6), Minn. R. 7019.0100, subp. 1]
EQUI 35	1	Applicability of Standards: The standards of Minn. R. 7011.1229, Minn. R. 7011.1230, Minn. R. 7011.1233, Minn. R. 7011.1240, subp. 2, and Minn. R. 7011.1272, subp. 2, apply at all times when waste is being continuously burned, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction does not exceed three hours. Fugitive emissions standards applicable to ash conveying systems do not apply during maintenance and repair of ash conveying systems. "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown are not considered malfunctions. The start-up period commences when the waste combustor begins the continuous burning of solid waste and does not include any warm-up period when the waste combustor is combusting fossil fuel or other solid fuel. Continuous burning is the continuous, semicontinuous, or batch feeding of solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of solid waste solely to provide thermal protection of the grate or hearth during the start-up period when municipal solid waste is not being fed to the grate is not considered to be continuous burning. [Minn. R. 7011.1215, subp. 4]
	2	The emission limits and operating requirements of 40 CFR pt. 60, subp. AAAA apply at all times except during periods of municipal waste combustion unit startup, shutdown, or malfunction. Each startup, shutdown, or malfunction must not last for longer than 3 hours. A maximum of 3 hours of test data can be dismissed from compliance calculations during periods of startup, shutdown, or malfunction. During startup, shutdown, or malfunction periods longer than 3 hours, emissions data cannot be discarded from compliance calculations and all provisions under 40 CFR 60.11(d) apply. [40 CFR 60.1205, 40 CFR 60.1220, Minn. R. 7011.1293]
	3	The Permittee must not cause to be emitted into the atmosphere gases in excess of the standards of performance under Minn. R. 7011.1229. [Minn. R. 7011.1225, subp. 2a]
	6	The Permittee must use data from the continuous emission monitoring systems (CEMs) for sulfur dioxide and carbon monoxide to demonstrate continuous compliance with the emission limits in this permit. [40 CFR 60.1235, Minn. R. 7011.1293]
	8	The Permittee must limit Particulate Matter <= 24 milligrams per dscm, 3-run average (run duration specified in test method) measured at 7% oxygen. [40 CFR 60.1210(b)(5), 40 CFR 60.1215, Minn. R. 7011.1293]
	9	The Permittee must limit Particulate Matter <= 0.020 grains per dry standard cubic foot. This limit is applied in accordance with the "Applicability of Standards" stated in this permit. [Minn. R. 7011.1229]
	10	The Permittee must limit Filterable Particulate Matter <= 0.015 grains per dry standard cubic foot. This limit is applied in accordance with the "Applicability of Standards" stated in this permit. [Minn. R. 7011.1229]

SI Id	Sequence	Requirement
	11	The Permittee must limit Muni Waste Combust Organics <= 30 nanograms per dscm, measured as total PCDD/PCDF. The Permittee must use 40 CFR pt. 60, Appendix A, Method 23, as amended, to determine compliance with the PCDD/PCDF emission limits. The minimum sample time is four hours per test run. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 23 test run for PCDD/PCDF. The average of the PCDD/PCDF test runs is used to determine compliance. [Minn. R. 7011.1229, Minn. R. 7011.1265, subp. 3(B)]
	12	The Permittee must limit Muni Waste Combust Organics <= 13 nanograms per dscm measured as Dioxins/furans (total mass basis), 3-run average (minimum run duration is 4 hours) measured at 7% oxygen. [40 CFR 60.1210(a), 40 CFR 60.1215, Minn. R. 7011.1293]
	14	The Permittee must limit Cadmium <= 0.020 milligrams per dscm 3-run average (run duration specified in test method) measured at 7% oxygen. [40 CFR 60.1210(b)(2), 40 CFR 60.1215, Minn. R. 7011.1293]
	15	The Permittee must limit Lead <= 0.20 milligrams per dscm, 3-run average (run duration specified in test method) measured at 7% oxygen. [40 CFR 60.1210(b)(2), 40 CFR 60.1215, Minn. R. 7011.1293]
	16	The Permittee must limit Mercury <= 100 micrograms per dscm (short-term), or 85% removal. [Minn. R. 7011.1229]
	17	The Permittee must limit Mercury <= 60 micrograms per dscm (long-term), or 85% removal. [Minn. R. 7011.1229]
	18	The Permittee must limit Mercury <= 0.080 milligrams per dscm, or 85% reduction of potential mercury emissions, 3-run average (run duration specified in test method), measured at 7% oxygen. [40 CFR 60.1210(b)(3), 40 CFR 60.1215, Minn. R. 7011.1293]
	19	The Permittee must limit Mercury <= 41.0 micrograms per dscm. This limit is applied in accordance with Minn. R. 7011.1240, subps. 2 and 5, and Minn. R. 7011.1272, subp. 2. The Permittee must follow the requirements specified in 40 CFR 60.1300 regarding sampling methods and other testing requirements, and Minn. R. 7011.1265, subp. 3(C) and Minn. R. 7011.1265, subp. 3(D). [Minn. R. 7007.0800, subp. 2(A)]
	20	The Permittee must limit Opacity <= 10 percent opacity 6-minute average, calculated using 36 or more data points equally spaced over a six-minute period. [40 CFR 60.1210(b)(4), 40 CFR 60.1215, Minn. R. 7011.1229, Minn. R. 7011.1260, subp. 4(F), Minn. R. 7011.1293]
	21	The Permittee must limit Carbon Monoxide <= 100 parts per million 4-hour block average, arithmetic mean, measured at 7% oxygen. Compliance is determined by continuous emission monitoring systems. The averaging period for carbon monoxide must be a daily 24-hour arithmetic average measured between 12 midnight and the following midnight. The four-hour and 24-hour average must be calculated from one-hour arithmetic averages. At least four points equally spaced in time shall be used to calculate each one-hour average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [40 CFR 60.1210(d)(1), 40 CFR 60.1215, Minn. R. 7011.1229, Minn. R. 7011.1260, subp. 4(C), Minn. R. 7011.1293]
	22	The Permittee must limit Hydrogen Chloride <= 25 parts per million by dry volume or 95% reduction of potential hydrogen chloride emissions, 3-run average (minimum run duration is 1 hour), measured at 7% oxygen. [40 CFR 60.1210(c)(1), 40 CFR 60.1215, Minn. R. 7011.1293]
	23	The Permittee must limit Hydrogen Chloride <= 25 parts per million or 90% control. [Minn. R. 7011.1229]
	24	The Permittee must limit Nitrogen Oxides <= 500 parts per million by dry volume, measured at 7% oxygen. No monitoring, testing, recordkeeping, or reporting is required to demonstrate compliance. [40 CFR 60.1210(c)(2), 40 CFR 60.1215, Minn. R. 7011.1293]

SI Id	Sequence	Requirement
	25	The Permittee must limit Sulfur Dioxide <= 30 parts per million 24-hour block average geometric concentration by dry volume, measured at 7% oxygen or 80% reduction of potential sulfur dioxide emissions. Determine compliance by emission monitoring system. For sulfur dioxide, the geometric average of the one-hour arithmetic average emission concentration during each 24-hour daily period measured from midnight to midnight. At least four data points equally spaced in time shall be used to calculate each one-hour arithmetic average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [40 CFR 60.1210(c)(3), 40 CFR 60.1215, Minn. R. 7011.1229, Minn. R. 7011.1260, subp. 4(D), Minn. R. 7011.1293]
	26	The Permittee must limit fugitive ash Visible Emissions <= 5 percent of the hourly observation period using three 1-hour observation periods, as determined by 40 CFR pt. 60, Appendix A, Method 22, as amended. [40 CFR 60.1210(d)(2), 40 CFR 60.1215, Minn. R. 7011.1293]
	27	The Permittee must limit Steam Flow <= 27,715 pounds per hour 4-hour block average. This is 110% of the steam production during the most recent EQUI 35 test (May 14-16, 2024) that demonstrated compliance for PCDD/PCDF emissions. Steam production shall not exceed 27,715 pounds per hour until a new test is conducted to establish a new maximum steam production capacity or as allowed by Minn. R. 7011.1240, subp. 5. [40 CFR 60.1200(a), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1260, subp. 4(B), Minn. R. 7011.1265, subp. 7, Minn. R. 7011.1293, Minn. R. 7017.2025, subp. 3]
	28	The Permittee must vent emissions from EQUI 35 to control equipment meeting the requirements of TREA 4, 5, and 6 whenever EQUI 35 operates. [Minn. R. 7007.0800, subp. 16(J)]
	29	EQUI 35 is exempt from limits on load level, temperature at the inlet of the particulate matter control device, and carbon feed rate during any of five situations: (1) During annual tests for dioxins/furans. (2) During annual mercury tests (for carbon feed rate requirements only). (3) During the 2 weeks preceding annual tests for dioxins/furans. (4) During the 2 weeks preceding annual mercury tests (for carbon feed rate requirements only). (5) Whenever the Administrator or delegated State authority permits the Permittee to do any of five activities: (i) Evaluate system performance. (ii) Test new technology or control technologies. (iii) Perform diagnostic testing. (iv) Perform other activities to improve the performance of EQUI 37. (v) Perform other activities to advance the state of the art for emission controls for EQUI 37. [40 CFR 60.1200(e), Minn. R. 7011.1293, Minn. R. 7017.2025, subp. 3]
	30	For projects of evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions and the project can be accomplished within 14 days, the Permittee shall submit a written notification 30 days prior to undertaking any of the activities identified to waive the maximum demonstrated capacity (load level) limit, with the following information: (1) a description of the proposed project, and the outcome the project is designed to evaluate; (2) how the project conforms with the activities described in this subpart for which the maximum demonstrated capacity limit can be waived; and (3) the length of time the project will take to complete. [Minn. R. 7011.1240, subp. 5, Minn. R. 7017.2025, subp. 3]

SI Id	Sequence	Requirement
	31	After the required date for full or provisional certifications, the Permittee must not operate EQUI 37 unless one of four employees is on duty: (a) A fully certified chief facility operator. (b) A provisionally certified chief facility operator who is scheduled to take the full certification exam. (c) A fully certified shift supervisor. (d) A provisionally certified shift supervisor who is scheduled to take the full certification exam. [40 CFR 60.1190, Minn. R. 7011.1293]
	32	A chief facility operator or shift supervisor who holds a certificate as described in Minn. R. 7011.1281, subp. 1 must be present at the waste combustor facility at all times when solid waste is being combusted, except if individuals are assuming the duties of chief facility operator or shift supervisor, the individuals must obtain full certification as described in Minn. R. 7011.1281 within six months of assuming such duties. [Minn. R. 7011.1240, subp. 1(A), Minn. R. 7011.1240, subp. 1a, Minn. R. 7011.1281]
	33	A "fully certified operator" means: A. a person who has obtained "certified municipal waste combustor examiner" certification as described in Minn. R. 7011.1282; B. a person who has obtained both "provisional certification" and "operator certification" according to ASME QRO-1-1994, incorporated by reference in Minn. R. 7011.1205; or C. a person who is a "fully certified operator" as described in Minn. R. 7011.1284. [Minn. R. 7011.1281, subp. 1]
	34	Criteria; fully certified operator. A. To be eligible as a fully certified operator, an individual must maintain a provisional certificate from ASME or a certificate described in Minn. R. 7011.1280, and pass an examination administered by the waste combustor's certified municipal waste combustor examiner. B. The examination shall test comprehensive understanding of the content and procedures described in the waste combustor's operating manual that is required to be prepared for the facility by Minn. R. 7011.1275, subp. 3. C. If changes are made in equipment and/or operating procedures which the initial certification did not address, certificate holders shall demonstrate to the facility's certified examiner detailed knowledge of these changes within six months after the change is made. If the demonstration of knowledge has not been made within six months, the certificate shall expire. [Minn. R. 7011.1284, subp. 2]

SI Id	Sequence	Requirement
	35	If the certified chief facility operator and certified shift supervisor both are unavailable, a provisionally certified control room operator at EQUI 35 may fulfill the certified operator requirement. Depending on the length of time that a certified chief facility operator and certified shift supervisor are away, the Permittee must meet one of three criteria: (a) When the certified chief facility operator and certified shift supervisor are both offsite for 12 hours or less, and no other certified operator is onsite, the provisionally certified control room operator may perform those duties without notice to, or approval by, the Administrator. (b) When the certified chief facility operator and certified shift supervisor are offsite for more than 12 hours, but for 2 weeks or less, and no other certified operator is onsite, the provisionally certified control room operator may perform those duties without notice to, or approval by, the Administrator. However, the Permittee must record the period when the certified chief facility operator and certified shift supervisor are offsite and include that information in the annual report as specified under 40 CFR 60.1410(l). (c) When the certified chief facility operator and certified shift supervisor are offsite for more than 2 weeks, and no other certified operator is onsite, the provisionally certified control room operator may perform those duties without notice to, or approval by, the Administrator. However, the Permittee must take two actions: (1) Notify the Administrator in writing. In the notice, state what caused the absence and what is being done to ensure that a certified chief facility operator or certified shift supervisor is onsite. (2) Submit a status report and corrective action summary to the Administrator every 4 weeks following the initial notification. If the Administrator notifies the Permittee that the status report or corrective action summary is disapproved, EQUI 35 may continue operation for 90 days, but then must cease operation. If corrective actions are taken in the 90-day period such that the Administrator withdraws the disapproval, EQUI 35 operation may continue. [40 CFR 60.1195, Minn. R. 7011.1293]
	36	Start-up on waste prohibited. During start-up from a cold furnace, the Permittee must use auxiliary fuels to achieve combustion chamber operating temperature. The use of solid waste solely to provide thermal protection of the grate or hearth during the start-up period when solid waste is not being fed to the grate is not considered to be continuous burning. [Minn. R. 7011.1240, subp. 3]
	37	The Permittee must use natural gas to warm the combustion chamber and pollution control devices, and maintain good combustion conditions in the combustion chamber from the time the waste feed has been discontinued until the combustion chamber is clear of combustible material or active combustion ceases. [Minn. R. 7007.0800, subp. 2(A)]
	38	Fuel Type: Natural gas, solid waste, RDF, and mixed municipal solid waste as defined in Minn. Stat. 115A.03, subp. 21, and other nonhazardous wastes approved through the Permittee's Industrial Solid Waste Management Plan. The Permittee is authorized to burn waste tires, yard waste, and household hazardous waste that are incidentally received co-mingled with municipal solid waste. The Permittee must not combust waste tires, yard waste, or household hazardous waste as a separate waste stream. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1220, subp. 2]
	39	The dumpstack of a waste combustor must not be used for conducting routine inspection or maintenance on the control equipment or the combustion system without prior approval of the commissioner. A dumpstack shall only be used at a waste combustor when plant or worker safety would be in jeopardy without its use. The Permittee must record in the daily operating record required in Minn. R. 7011.1285, subp. 2, the date of use of the dumpstack, the length of time the dumpstack was used, the operating conditions of the waste combustor during dumpstack use, and the reason for using the dumpstack. [Minn. R. 7011.1240, subp. 7]

SI Id	Sequence	Requirement
	42	Three types of employees must complete the EPA or State-approved operator training course: (1) Chief facility operators. (2) Shift supervisors. (3) Control room operators. These employees must complete the operator training course by the date before an employee assumes responsibilities that affect operation of EQUI 35. [40 CFR 60.1160, Minn. R. 7011.1293]
	43	Each chief facility operator and shift supervisor must obtain and keep a current provisional operator certification from the American Society of Mechanical Engineers (QRO-1-1994) (incorporated by reference in 40 CFR 60.17(g)(17) or a current provisional operator certification from the coursework and examination program set forth in Minn. R. 7011.1280, subp. 3. Each chief facility operator and shift supervisor must obtain a provisional certification by six months after they transfer to the municipal waste combustion unit or six months after they are hired to work at EQUI 35. [40 CFR 60.1185(a) and (b), Minn. R. 7011.1293]
	44	A person shall be certified as an operator provided the person can demonstrate the completion of: A. ASME provisional certification as described in Standard for the Qualification and Certification of Resource Recovery Facility Operators, American Society of Mechanical Engineers (ASME) QRO-1-1994, incorporated by reference in Minn. R. 7011.1205, for chief facility operators, shift supervisors, and control room operators of municipal waste combustors; or B. the coursework and examination program set forth in Minn. R. 7011.1280, subp. 3. [Minn. R. 7011.1280, subp. 1(A)]
	45	Control room operators shall be certified as described in Minn. R. 7011.1280. Individuals, if assuming the duties of control room operator for the first time, shall obtain certification as described in Minn. R. 7011.1280 within six months of assuming such duties. [Minn. R. 7011.1240, subp. 1a(A)(5)]
	46	Each chief facility operator and shift supervisor must take one of three actions: (1) Obtain a full certification from the American Society of Mechanical Engineers or a State certification as described in Minn. R. 7011.1281. (2) Schedule a full certification exam with the American Society of Mechanical Engineers (QRO-1-1994) (incorporated by reference in 40 CFR 60.17(g)(17) and Minn. R. 7011.1205). (3) Schedule a full certification exam with the State of Minnesota certification program as described in Minn. R. 7011.1281. The chief facility operator and shift supervisor must obtain the full certification or be scheduled to take the certification exam by six months after they transfer to the municipal waste combustion unit or six months after they are hired to work at the municipal waste combustion unit. [40 CFR 60.1185(c) and (d), Minn. R. 7011.1293]
	47	Individuals, if assuming the duties of chief facility operator or shift supervisor shall have obtained full certification as described in Minn. R. 7011.1281 within six months of assuming such duties. [Minn. R. 7011.1240, subp. 1a(A)(4), Minn. R. 7011.1281]

SI Id	Sequence	Requirement
	48	For plant-specific training, the Permittee must develop a specific operating manual and update your manual annually. The Permittee must include the following 11 items in the operating manual: (a) A summary of all applicable requirements in 40 CFR pt. 60, subp. AAAA. (b) A description of the basic combustion principles that apply to EQUI 35. (c) Procedures for receiving, handling, and feeding municipal solid waste. (d) Procedures to be followed during periods of startup, shutdown, and malfunction of EQUI 35. (e) Procedures for maintaining a proper level of combustion air supply. (f) Procedures for operating EQUI 35 in compliance with the requirements contained in 40 CFR pt. 60, subp. AAAA. (g) Procedures for responding to periodic upset or off-specification conditions. (h) Procedures for minimizing carryover of particulate matter. (i) Procedures for handling ash. (j) Procedures for monitoring emissions from the municipal waste combustion unit. (k) Procedures for recordkeeping and reporting. The Permittee must keep the operating manual in an easily accessible location at the plant. It must be available for review or inspection by all employees who must review it and by the Administrator. [40 CFR 60.1170(a) and (c), 40 CFR 60.1175, 40 CFR 60.1180, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1293]
	49	The Permittee shall develop and update on a yearly basis a site specific operating manual that shall, at a minimum, address the following elements of waste combustor unit operation: A. a summary of the applicable state rules and federal regulations to the activities described in the facility's air emissions permit; B. a description of basic combustion principles and theory applicable to the facility's waste combustor units; C. procedures for receiving, handling, and feeding municipal solid waste; D. waste combustor unit start-up, shutdown, and malfunction procedures; E. procedures for maintaining proper combustion air levels and supply; F. procedures for operating the waste combustor within the standards established in Minn. R. 7011.1201 to 7011.1294; G. procedures for responding to periodic upset or off-specification conditions; H. procedures for minimizing particulate matter carryover; I. procedures for monitoring the degree of solid waste burnout; J. procedures for handling ash; K. procedures for monitoring waste combustor emissions; L. procedures for reporting and record keeping; M. timetables and procedures for routine inspection and maintenance of equipment affecting air emissions; N. procedures for activating communications and alarm systems; and O. procedures to implement the facility's industrial waste management plan. The operating manual shall be kept in a location easily accessed by waste combustor personnel who have responsibilities which affect the operation of the waste combustor, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers. The Permittee must update the manual following each performance test to include operational changes resulting from emission performance testing results and include the revision dates within the operating manual. [Minn. R. 7011.1275, subp. 3]

SI Id	Sequence	Requirement
	50	The Permittee shall establish a program to review the plant-specific operating manual with people whose responsibilities affect the operation of the waste combustor. Initial review by the date before an employee assumes responsibilities that affect operation of the waste combustor unit. Waste combustor personnel shall review the operating manual relevant to a newly assigned position before assumption of new job-related activities affecting air emissions. The Permittee shall update and review the manual with staff annually. The Permittee must record the date of initial review and annual update and review. [40 CFR 60.1170(b),(c),&(d), Minn. R. 7011.1293]
	51	Waste combustor facility personnel who have responsibilities which affect the operation of the waste combustor, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers must complete a program of instruction and on-the-job training based on the operating manual described in Minn. R. 7011.1275, subp. 3. The program must train facility personnel to maintain compliance with Minn. R. 7011.1201 to 7011.1294. Individual training shall be specific to the position held and shall, at a minimum, address the items in Minn. R. 7011.1275, subp. 3. For waste combustor personnel described in Minn. R. 7011.1275, subp. 2, the training program shall require: - initial review of the operating manual prior to assumption of any job-related activities affecting air emissions; -review of the operating manual relevant to a newly assigned position before assumption of new job-related activities affecting air emissions; and -annual review of the operating manual. [Minn. R. 7011.1275, subp. 1(A),(B),&(D)]
	52	Personnel without waste combustor or boiler operation experience must initially review the operating manual and work under the direct supervision of a certified operator or a certified operator's designee before assumption of job-related activities affecting air emissions for a minimum of 40 hours. The Permittee must record the dates of the training sessions and the number of hours trained in each session. [Minn. R. 7011.1275, subp. 1(C)(1)]
	53	All employees with responsibilities that affect how a municipal waste combustion unit operates must complete the plant-specific training course. Include at least six types of employees: (a) Chief facility operators. (b) Shift supervisors. (c) Control room operators. (d) Ash handlers. (e) Maintenance personnel. (f) Crane or load handlers. [40 CFR 60.1165, Minn. R. 7011.1293]

SI Id	Sequence	Requirement
	54	Training Program: Waste combustor personnel who have responsibilities which affect the operation of the waste combustor, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers, must complete a program of instruction and on-the-job training based on the operating manual. The program must train facility personnel to maintain compliance with Minn. R. 7011.1201 to 7011.1294. Individual training shall be specific to the position held and shall, at a minimum, address the items in Minn. R. 7011.1275, subp. 3. The Permittee must: - Implement the training program for personnel; - Identify all personnel who must be trained; - Include a separate page for each personnel in the operating record; - Record the names of those who have been trained, the type of training received, the number of training hours, and the date training was completed. The Permittee must maintain as a part of the operating record required by Minn. R. 7011.1285, subp. 2, a record of the identity of all personnel who have received training and the number of training hours. The records shall be provided to the commissioner on demand. [Minn. R. 7011.1275, subp. 1-2, Minn. R. 7011.1275, subp. 4]
	55	The Permittee must keep the following records: (a) Records of provisional certifications. Include three items: (1) For the municipal waste combustion plant, names of the chief facility operator, shift supervisors, and control room operators who are provisionally certified by the American Society of Mechanical Engineers or an equivalent State-approved certification program. (2) Dates of the initial provisional certifications. (3) Documentation showing current provisional certifications. (b) Records of full certifications. Include three items: (1) For the municipal waste combustion plant, names of the chief facility operator, shift supervisors, and control room operators who are fully certified by the American Society of Mechanical Engineers or an equivalent State-approved certification program. (2) Dates of initial and renewal full certifications. (3) Documentation showing current full certifications. (c) Records showing completion of the operator training course. Include three items: (1) For the municipal waste combustion plant, names of the chief facility operator, shift supervisors, and control room operators who have completed the EPA or State municipal waste combustion operator training course. (2) Dates of completion of the operator training course. (3) Documentation showing completion of operator training course. (d) Records of reviews for plant-specific operating manuals. Include three items: (1) Names of persons who have reviewed the operating manual. (2) Date of the initial review. (3) Dates of subsequent annual reviews. (e) Records of when a certified operator is temporarily offsite. Include two main items: (1) If the certified chief facility operator and certified shift supervisor are offsite for more than 12 hours but for 2 weeks or less and no other certified operator is onsite, record the dates that the certified chief facility operator and certified shift supervisor were offsite. (2) When all certified chief facility operators and certified shift supervisors are offsite for more than 2 weeks and no other certified operator is onsite, keep records of four items: (i) A notice that all certified persons are offsite. (ii) The conditions that cause these people to be offsite. (iii) The corrective actions taken to ensure a certified chief facility operator or certified shift supervisor is onsite.

SI Id	Sequence	Requirement
		(iv) Copies of the written reports submitted every 4 weeks that summarize the actions taken to ensure that a certified chief facility operator or certified shift supervisor will be onsite. (f) Records of calendar dates. Include the calendar date on each record. [40 CFR 60.1355, Minn. R. 7011.1293]
	56	Record of certified operators. The Permittee shall maintain at the waste combustor facility for five years a record of the names of all personnel that the examiner has certified. This record shall contain the examination dates, the nature or content of the examination, the full name of the individual certified, the date of certification, and the signature of the certified examiner for that facility with the following certification: "I certify under penalty of law that, based on my examination of these persons, these persons have demonstrated the knowledge and skills that qualify these persons to be fully certified operators at Perham Resource Recovery Facility in accordance with the procedures of Minnesota Rules, parts 7011.1280 to 7011.1284." The Permittee shall maintain at the waste combustor facility for five years a record of the names of all personnel who have obtained provisional and/or full certification by ASME. The Permittee shall allow the commissioner to review all records related to the certification of operators, including the facility's program for the examination and certification of operators, the record required in Minn. R. 7011.1284, subp. 3, the content of examinations, and the results of an individual's examination. [Minn. R. 7011.1284, subp. 3, Minn. R. 7011.1284, subp. 3a, Minn. R. 7011.1284, subp. 4]
	57	The Permittee shall maintain a record of personnel who complete either the Environmental Protection Agency municipal waste combustor operator training course, or an equivalent course. The record shall include documentation of training completion. [Minn. R. 7011.1280, subp. 11]
	64	Particulate Matter: The Permittee must conduct a performance test: Due annually to measure particulate matter (PM) emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. To measure PM for federal regulated pollutants, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 5 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. The minimum sample volume must be 1.0 cubic meters. The probe and filter holder heating systems in the sample train must be set to provide a gas temperature no greater than 160 plus or minus 14 degrees Celsius. The minimum sampling time is 1 hour. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1300(a), 40 CFR 60.1305(a), 40 CFR pt. 60, subp. AAAA, Table 5, Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1, Minn. Stat. 116.85, subd. 1]

SI Id	Sequence	Requirement
	67	Particulate Matter: The Permittee must conduct a performance test: Due annually to measure particulate matter (PM) emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. For state regulated pollutants, if three annual performance tests for a three-year period show compliance with PM emission limits, the Permittee may continue to conduct annual testing, or may choose to conduct performance tests every 2.5 years. At a minimum, a performance test must be conducted every 2.5 years, but no more than 30 months following the previous compliance test. If a performance test indicates noncompliance with applicable standards, the Permittee must resume annual testing for three years for PM emissions. If three annual performance tests for the three-year period show compliance with PM emission limits, the Permittee may again conduct performance testing every 2.5 years. To measure PM for state regulated pollutants, the Permittee must use Method 5, 40 CFR pt. 60, Appendix A-3, as amended, and Method 202, 40 CFR pt. 51, Appendix M, as amended. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7017.2020, subp. 1]
	69	Mercury: The Permittee must conduct a performance test: Due annually to measure mercury emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. The facility may implement testing for mercury not less than once every three years or according to federal applicable requirements, whichever is more stringent, under the following conditions: the facility has demonstrated that mercury emissions have been below 50 percent of the facility's permitted long-term limit for three consecutive years. If a facility is granted testing for mercury not less than once every three years or according to federal applicable requirements, whichever is more stringent, and a mercury performance test shows mercury emissions greater than 50 percent of the facility's permitted mercury limit, the facility shall conduct annual mercury stack testing until emissions are below 50 percent of the facility's permitted mercury limit. Once the facility demonstrates that mercury emissions are again below 50 percent of the facility's permitted limit, the facility may resume testing every three years, upon notifying the Commissioner in writing. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. To measure mercury, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 29 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Compliance testing must be performed while the municipal waste combustion unit is operating at full load.

SI Id	Sequence	Requirement
		The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1300(a), 40 CFR 60.1305(a), 40 CFR pt. 60, subp. AAAA, Table 5, Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1, Minn. Stat. 116.85, subd. 1]
	72	Mercury or PCDD/PCDF removal equipment operation. The Permittee shall determine and record the average additive mass feed rate, in pounds-per-hour, during the initial and at each subsequent performance test for mercury or PCDD/PCDF. The Permittee shall correlate this feed rate to an operating parameter of the additive injection system. The Permittee shall submit the calculations supporting the correlation with the results of each mercury or PCDD/PCDF performance test. [Minn. R. 7011.1272, subp. 1]
	75	The maximum demonstrated capacity of EQUI 35 must be determined during each subsequent performance test during which compliance with the PCDD/PCDF emission limit in Minn. R. 7011.1225 is achieved. [Minn. R. 7011.1265, subp. 7]
	77	Muni Waste Combust Organics: The Permittee must conduct a performance test: Due annually to measure Muni Waste Combust Organics (dioxins/furans or PCDD/PCDF) emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. For state regulated pollutants, if 3 annual performance tests for a three-year period show compliance with dioxin/furan emission limits, the Permittee may continue to conduct annual testing, or may choose to conduct performance tests every 2.5 years. At a minimum, a performance test must be conducted every 2.5 years, but no more than 30 months following the previous compliance test. If a performance test indicates noncompliance with applicable standards, the Permittee must resume annual testing for 3 years for dioxin/furan emissions. If 3 annual performance tests for the 3-year period show compliance with dioxin/furan emission limits, the Permittee may again conduct performance testing every 2.5 years. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. To measure dioxins/furans, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 23 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. The minimum sampling time must be 4 hours per test run while the municipal waste combustion unit is operating at full load. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter.

SI Id	Sequence	Requirement
		Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1300(a), 40 CFR 60.1305(b), 40 CFR pt. 62, subp. AAAA, Table 5, Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1]
	79	Hydrogen Chloride: The Permittee must conduct a performance test: Due annually to measure hydrogen chloride (HCl) emissions. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. The Permittee may test less often if all stack tests for HCl over 3 consecutive years show compliance with the HCl limit. In this case, the Permittee is not required to conduct a stack test for HCl for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the HCl limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for HCl. To measure HCl, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 26 or 26A to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Test runs must be at least 1 hour long while the municipal waste combustion unit is operating at full load. The Permittee must include the SO2 CEMS data recorded during the time of the performance test as an appendix to the test report. The Permittee must also include chlorine in the ultimate fuel analysis as part of the Waste Composition Study. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1300(a), 40 CFR 60.1305(a), 40 CFR pt. 60, subp. AAAA, Table 5, Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1]
	80	Opacity: The Permittee must conduct a performance test: Due annually to measure opacity. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. For state regulated pollutants, if three annual performance tests for a three-year period show compliance with opacity limits, the Permittee may continue to conduct annual testing, or may choose to conduct performance tests every 2.5 years. At a minimum, a performance test must be conducted every 2.5 years, but no more than 30 months following the previous compliance test. If a performance test indicates noncompliance with applicable standards, the Permittee must resume annual testing for three years for opacity emissions. If three annual performance tests for the three-year period show compliance with opacity limits, the Permittee may again conduct performance testing every 2.5 years. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant.

SI Id	Sequence	Requirement
		The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2, using EPA Reference Methods 9 to determine the sampling location, pollutant concentration, and compliance with opacity limits, using a 3 hour observation period (thirty 6-min averages). Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1300(a), 40 CFR 60.1305(a), 40 CFR pt. 60, subp. AAAA, Table 5, Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1]
	81	Cadmium: The Permittee must conduct performance test: Due annually to measure cadmium emissions. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. The Permittee may test less often if all stack tests for cadmium over 3 consecutive years show compliance with the cadmium limit. In this case, the Permittee is not required to conduct a stack test for cadmium for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the cadmium limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for cadmium. To measure cadmium, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 29 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Compliance testing must be performed while the municipal waste combustion unit is operating at full load. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1300(a), 40 CFR 60.1305(a), 40 CFR pt. 60, subp. AAAA, Table 5, Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	82	Lead: The Permittee must conduct a performance test: Due annually to measure lead emissions. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. The Permittee may test less often if all stack tests for lead over 3 consecutive years show compliance with the lead limit. In this case, the Permittee is not required to conduct a stack test for lead for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the lead limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for lead. To measure lead, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 29 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Compliance testing must be performed while the municipal waste combustion unit is operating at full load. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1300(a), 40 CFR 60.1305(a), 40 CFR pt. 60, subp. AAAA, Table 5, Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1]
	84	Visible Emissions: The Permittee must conduct a performance test: Due annually for visible emissions from fugitive ash. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 14-16, 2024. The Permittee may test less often if all stack tests for fugitive ash emissions over 3 consecutive years show compliance with the fugitive ash emissions limit. In this case, the Permittee is not required to conduct a stack test for fugitive ash emissions for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the fugitive ash emissions limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for fugitive ash. To measure fugitive ash, the Permittee must use Method 22 (visible emissions). The three 1-hour observation period must include periods when the Permittee transfers fugitive ash from the waste combustion unit to the area where fugitive ash is stored or loaded into containers or trucks. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 60.1290, 40 CFR 60.1295(b), 40 CFR 60.1305(a), 40 CFR 62.1300(a), 40 CFR pt. 60, subp. AAAA, Table 5, Minn. R. 7011.1293, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	86	The Permittee must submit a performance test report: Due 45 calendar days after Performance Test Date (60 calendar days for dioxin/furan performance test). The reports shall contain the results of performance tests conducted to determine compliance with waste combustor unit emission limits whenever performance testing is conducted. The report shall be submitted according to the conditions of Minn. R. 7017.2035. [Minn. R. 7011.1285, subp. 6, Minn. R. 7017.2035, subp. 1-2]
	87	The maximum demonstrated load of a municipal waste combustion unit means the highest 4-hour block arithmetic average municipal waste combustion unit load achieved during 4 consecutive hours in the course of the most recent dioxins/furans stack test that demonstrates compliance with the applicable emission limit for dioxins/furans specified in 40 CFR pt. 60, subp. AAAA. Maximum demonstrated temperature of the particulate matter control device means the highest 4-hour block arithmetic average flue gas temperature measured at the inlet of the particulate matter control device during 4 consecutive hours in the course of the most recent stack test for dioxins/furans emissions that demonstrates compliance with the limits specified in 40 CFR pt. 60, subp. AAAA. [40 CFR 60.1465, Minn. R. 7011.1293]
	88	Operation during performance testing. The Permittee must report operating conditions to the commissioner, including operating parameters of the air pollution control equipment, flue gas temperatures, air flow rates, and pressure drop across the combustion system. [Minn. R. 7011.1265, subp. 6]
	89	The Permittee must install, calibrate, maintain, and operate a device to continuously measure the temperature of the flue gas stream at the inlet of each particulate matter control device. [40 CFR 60.1325, Minn. R. 7011.1293]
	90	The Permittee must select a mercury/PCDD/PCDF control additive system operating parameter that can be used to calculate mercury/PCDD/PCDF control additive (additive) feed rate (for example, screw feeder speed). During each PCDD/PCDF and mercury performance test, the Permittee shall determine the average additive feed rate in kilograms (or pounds) per hour and determine the average operating parameter level that correlates to that additive feed rate. The Permittee shall also establish a relationship between the operating parameter and the additive feed rate in order to calculate the additive feed rate based on the operating parameter level. [40 CFR 60.1330(a) and (b), Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1293]
	91	Exceeding emission limits. If accurate and valid data results of a performance test demonstrate an exceedance of a standard of performance under Minn. R. 7011.1225 or in the waste combustor's air emission facility permit after normal start-up, the Permittee must take the actions in items A to D: A. The Permittee must report to the commissioner as soon as reasonably possible with consideration to plant and worker safety and comply with the applicable reporting provisions of Minn. R. 7007.0800, subpart 6. B. The Permittee must take appropriate steps to return the waste combustor to compliance including additional performance test(s) and must demonstrate compliance within 60 days of the initial report of the exceedance. C. If the commissioner determines that compliance has not been achieved within 60 days of the initial report of exceedance, the waste combustor must be shut down on the 61st day after reporting the exceedance. D. If shutdown was required under item C, the waste combustor may be restarted under the conditions specified by the commissioner. The Permittee must notify the commissioner in writing of the date on which the Permittee plans to start up and to begin compliance testing. Notification must be at least ten days in advance of the compliance test date. The permittee may restart the waste combustor for the purposes of compliance testing, provided that notification has been provided to the Commissioner. The Permittee is allowed to operate the waste combustor until the completion of the test, after which the waste combustor must be shut down. The waste combustor may be restarted only after the Permittee receives notice from the commissioner compliance has been achieved with the emissions standards or restarts for the purpose and duration of additional testing after further repair or operational changes. [Minn. R. 7007.0800, subp. 2(B), Minn. R. 7011.1265, subp. 11, Minn. Stat. 116.85, subd. 3]

SI Id	Sequence	Requirement
	93	Continuous Monitoring: The Permittee must install, calibrate, maintain, and operate continuous emission monitoring systems for oxygen (or carbon dioxide), sulfur dioxide, and carbon monoxide at the outlet of the air pollution control device. The Permittee must install, evaluate, and operate each continuous emission monitoring system according to the "Monitoring Requirements" in 40 CFR 60.13, subp. A. The Permittee must monitor the oxygen (or carbon dioxide) concentration at each location where sulfur dioxide and carbon monoxide are monitored. The Permittee may choose to monitor carbon dioxide instead of oxygen as a diluent gas. If the Permittee chooses to monitor carbon dioxide, then an oxygen monitor is not required and the Permittee must follow the requirements in 40 CFR 60.1255. If the Permittee chooses to demonstrate compliance by monitoring the percent reduction of sulfur dioxide, the Permittee must also install a continuous emission monitoring system for sulfur dioxide and oxygen (or carbon dioxide) at the inlet of the air pollution control device. If the Permittee prefers to use an alternative sulfur dioxide monitoring method, such as parametric monitoring, or cannot monitor emissions at the inlet of the air pollution control device to determine percent reduction, the Permittee can apply to the Administrator for approval to use an alternative monitoring method under 40 CFR 60.13(i). [40 CFR 60.1225, 40 CFR 60.1230, Minn. R. 7011.1293]
	94	The Permittee must install, calibrate, maintain, and operate a continuous monitoring system when burning solid waste. Monitoring systems that continuously read and record sulfur dioxide must be installed. For those facilities for which compliance is determined by the percent reduction of emissions, monitors must be installed at the inlets and outlets of the air pollution control system. [Minn. R. 7011.1260, subp. 3(C)]
	95	The Permittee must install, calibrate, maintain, and operate temperature monitors that continuously read and record the temperatures of the flue gas at the inlet of each particulate matter control device. [Minn. R. 7011.1260, subp. 2]
	96	The Permittee must also install, calibrate, maintain, and operate continuous monitor systems that read, record, and obtain representative measures of the process parameters from the affected facility for the following three operating parameters: (a) Load level of each municipal waste combustion unit. (b) Temperature of flue gases at the inlet of the particulate matter air pollution control devices. (c) Carbon/control additive feed rate used to control dioxins/furans or mercury emissions. [40 CFR 60.13(f), 40 CFR 60.1315, Minn. R. 7011.1293, Minn. R. 7017.1010, subp. 1(A)]
	97	Continuous Opacity Monitoring. The Permittee must: -Install, calibrate, maintain, and operate a continuous opacity monitoring system. -Install, evaluate, and operate each continuous opacity monitoring system according to 40 CFR 60.13. -Complete each annual evaluation of the continuous opacity monitoring system according to Performance Specification 1 in 40 CFR pt. 60, appendix B, no more than 13 months after the previous evaluation. -Use tests conducted according to EPA Reference Method 9 in 40 CFR pt. 60, appendix A, as specified in 40 CFR 60.1300, to determine compliance with the opacity limit in 40 CFR pt. 60, subp. AAAA, Table 1. The data obtained from the continuous opacity monitoring system are not used to determine compliance with the opacity limit. [40 CFR 60.1225, 40 CFR 60.1270, Minn. R. 7011.1293]

SI Id	Sequence	Requirement
	98	The Permittee must install, calibrate, maintain, and operate a device to continuously measure the temperature of the flue gas stream at the inlet of each particulate matter control device. [40 CFR 60.1325, Minn. R. 7011.1293]
	99	Continuous Monitoring: The Permittee must: - Continuously monitor the selected mercury/PCDD/PCDF control additive (additive) feed rate operating parameter during all periods when the municipal waste combustion unit is operating and combusting waste. - Calculate the 8-hour block average additive feed rate in kilograms (or pounds) per hour. 8-hour block average means the average of all hourly emission concentrations or parameter levels when the municipal waste combustion unit operates and combusts municipal solid waste measured over any of three 8-hour periods of time:12:00 midnight to 8:00 a.m.; 8:00 a.m. to 4:00 p.m.; and 4:00 p.m. to 12:00 midnight. - When calculating the 8-hour block average, exclude hours when the unit is not operating and include hours when unit is operating but the additive feed system is not working correctly. [40 CFR 60.1330(c), 40 CFR 60.1465, Minn. R. 7011.1293]
	100	Continuous Monitoring: The Permittee must obtain one-hour arithmetic averages from four or more data points equally spaced over each 1-hour period for: - Load level of the municipal waste combustion unit. - Temperature of the flue gases at the inlet of the particulate matter control device. - Mercury/PCDD/PCDF control additive feed rate. Data recorded during periods of continuous system breakdown, repair, calibration checks, and zero and span adjustments must not be included in the data averages computed, unless there are, at least, two data points per hour. The Permittee must obtain at least two data points per hour in order to calculate a valid 1-hour arithmetic average. The Permittee must obtain valid 1-hour averages for at least 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter. An operating day is any day the unit combusts any municipal solid waste. If the Permittee does not obtain the minimum data required, the Permittee is in violation of this data collection requirement and must notify the Administrator according to 40 CFR 60.1410(e). [40 CFR 60.13(e)(2), 40 CFR 60.13(h)(2), 40 CFR 60.1335, Minn. R. 7011.1293]
	101	The Permittee must operate continuous monitors to measure and record data for at least 75 percent of the hours per day for 90 percent of the days of the calendar quarter that the waste combustor is operating and combusting solid waste. [Minn. R. 7011.1260, subp. 5(B)]
	103	Continuous Monitoring: All continuous monitoring systems and monitoring devices required under 40 CFR pt. 60, including CEMS and COMS, shall be installed, operational, and certified prior to conducting performance tests under 40 CFR 60.8. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device. [40 CFR 60.13(b), Minn. R. 7017.1010, subp. 1(A)]
	104	Continuous Operation: Except for continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, all continuous monitoring systems (including CEMS and COMS) shall be in continuous operation during all periods of emission unit operation. This includes periods of emission unit start-up, shutdown, or malfunction. [40 CFR 60.13(e), Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1090, subp. 1]

SI Id	Sequence	Requirement
	105	The Permittee must install, calibrate, maintain, and operate a steam flowmeter or a feed water flowmeter that continuously measures and records the measurements of steam (or feed water) in kilograms (or pounds) per hour. The Permittee must calculate the steam (or feed water) flow in 4-hour block averages. The Permittee must calculate the steam (or feed water) flow rate using the method in "American Society of Mechanical Engineers Power Test Codes: Test Code for Steam Generating Units, Power Test Code 4.1-1964 (R1991)," section 4 (incorporated by reference in 40 CFR 60.17(g)(13)). The Permittee must design, construct, install, calibrate, and use nozzles or orifices for flow rate measurements, using the recommendations in "American Society of Mechanical Engineers Interim Supplement 19.5 on Instruments and Apparatus: Application, part II of Fluid Meters," 6th Edition (1971), chapter 4 (incorporated by reference in 40 CFR 60.17(g)(1)). Before each dioxins/furans stack test, or at least once a year, the Permittee must calibrate all signal conversion elements associated with steam (or feed water) flow measurements according to the manufacturer instructions. [40 CFR 60.1315(a), 40 CFR 60.1320(a), Minn. R. 7011.1293]
	106	The method contained in ASME PTC 4.1, section 4, incorporated by reference in Minn. R. 7011.1205, must be used for calculating the steam flow (of feed water) required under Minn. R. 7011.1260, subp.3, item A, subitem (2). The recommendations of Application: Part II of Fluid Meters, Interim Supplement 19.5 on Instruments and Apparatus, chapter 4, incorporated by reference in Minn. R. 7011.1205, must be followed for design, construction, installation, calibration, and use of nozzles and orifices, except that measurement devices such as flow nozzles and orifices are not required to be recalibrated after they are installed. All signal conversion elements associated with steam flow (or feed water) measurements must be calibrated according to the manufacturer's instructions before each PCDD/PCDF test, and at least once per year. This annual calibration shall be recorded in the daily operating record as described in Minn. R. 7011.1285, subp. 2. [Minn. R. 7011.1265, subp. 4]
	107	If the municipal waste combustion unit does not generate steam, or, if municipal waste combustion units have shared steam systems and steam load cannot be estimated per unit, The Permittee must determine, to the satisfaction of the Administrator, one or more operating parameters that can be used to continuously estimate load level (for example, the feed rate of municipal solid waste). The Permittee must continuously monitor the selected parameters. [40 CFR 60.1315(a), 40 CFR 60.1320(b), Minn. R. 7011.1293]
	108	Alternative continuous measuring methods in place of steam flow may be installed and operated, provided that the method continuously measures the waste combustor unit load, is equivalent to results obtained when using the method in Minn. R. 7011.1265, subp. 4, and the use of the method is approved by the commissioner prior to installation. [Minn. R. 7011.1265, subp. 4a]

SI Id	Sequence	Requirement
	109	To convert 1-hour arithmetic averages into the appropriate averaging times and units, the Permittee must: - Use the equation in 40 CFR 60.1460(a) (listed below) to calculate emissions at 7 percent oxygen. Concentration correction to 7 percent oxygen. Correct any pollutant concentration to 7 percent oxygen using this equation: C7% = Cunc * (13.9) * (1/(20.9-CO2)) Where: C7% = concentration corrected to 7 percent oxygen. Cunc = uncorrected pollutant concentration. CO2 = concentration of oxygen (percent). - Use EPA Reference Method 19 in appendix A of 40 CFR pt. 60, section 4.3, to calculate the daily geometric average concentrations of sulfur dioxide emissions. If monitoring the percent reduction of sulfur dioxide, use EPA Reference Method 19 in appendix A of 40 CFR pt. 60, section 5.4, to determine the daily geometric average percent reduction of potential sulfur dioxide emissions. - Use EPA Reference Method 19 in appendix A of 40 CFR pt. 60, section 4.1, to calculate the 4-hour or 24-hour daily block averages (as applicable) for concentrations of carbon monoxide. If the Permittee does not obtain the minimum data required in 40 CFR 60.1260(a) through (c), the Permittee must still use all valid data from the continuous emission monitoring systems in calculating emission concentrations and percent reductions in accordance with 40 CFR 60.1265. [40 CFR 60.1260(e), 40 CFR 60.1265, Minn. R. 7011.1293]
	110	The Permittee must obtain 1-hour arithmetic averages for continuous emission monitoring systems. The Permittee must make sure the averages for sulfur dioxide and carbon monoxide are in parts per million by dry volume at 7 percent oxygen (or the equivalent carbon dioxide level) and use the 1-hour averages of oxygen (or carbon dioxide) data from the continuous emission monitoring system to determine the actual oxygen (or carbon dioxide) level and to calculate emissions at 7 percent oxygen (or the equivalent carbon dioxide level). The Permittee must obtain at least two data points per hour in order to calculate a valid 1-hour arithmetic average. 40 CFR 60.13(e)(2) requires the continuous emission monitoring systems to complete at least one cycle of operation (sampling, analyzing, and data recording) for each 15-minute period. The Permittee must obtain valid 1-hour averages for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter. An operating day is any day the unit combusts any municipal solid waste or refuse-derived fuel. [40 CFR 60.1260(a)-(c), Minn. R. 7011.1293]
	115	The Permittee must use all valid data from the continuous emission monitoring systems in calculating emission concentrations and percent reductions. When continuous emissions data for sulfur dioxide removal efficiency, sulfur dioxide, or carbon monoxide are not obtained because of monitor breakdowns, repairs, calibration checks, and zero and span adjustments, emission data calculations to determine compliance must be made using the following methods: (1) for sulfur dioxide removal efficiency or sulfur dioxide emission concentrations, 40 CFR pt. 60, Appendix A, Method 19, as amended, to provide valid emission data to meet the requirements of Minn. R. 7011.1260, subp. 5(B). Other monitoring systems or other data collection methods may be used as approved by the commissioner; and (2) for carbon monoxide, 40 CFR pt. 60, Appendix A, Method 10, as amended, to provide valid emission data to meet the requirements of Minn. R. 7011.1260, subp. 5(B). Other monitoring systems or other data collection methods may be used as approved by the commissioner. [Minn. R. 7011.1260, subp. 5(C)-(D)]

SI Id	Sequence	Requirement
	116	The Permittee must notify the Administrator according to 40 CFR 60.1410(e) if the minimum data required for continuously monitored emissions and parameters are not obtained. [40 CFR 60.1260(d), 40 CFR 60.1335(d), Minn. R. 7011.1293]
	127	Exceeding continuously monitored emission limits. If accurate and valid data results collected from continuous monitors for sulfur dioxide or carbon monoxide data exceed emission limits established in Minn. R. 7011.1225 or this permit after normal start-up, the Permittee must take the following actions: A. The exceedance must be reported to the commissioner as soon as reasonably possible, giving consideration to matters of plant or worker safety or access to communications. B. Appropriate repairs or modifications to return the waste combustor to compliance must be commenced within 72 hours of the exceedance. C. If the waste combustor cannot be returned to compliance within 72 hours of the exceedance occurring, the waste combustor must be shut down. If the modifications to return the waste combustor to compliance require amending the air emission facility permit, the waste combustor must shut down within 72 hours of the exceedance. D. When repairs or modifications have been completed, the Permittee must demonstrate to the commissioner that the waste combustor is in compliance. The waste combustor may be started up after the Permittee notifies the commissioner in writing of the date the Permittee plans to start up the waste combustor and the date that compliance testing is scheduled. Notification must be given at least ten days in advance of the compliance test date. [Minn. R. 7011.1260, subp. 7]
	130	Recording data from continuous monitoring. The Permittee must maintain a permanent record of continuously measured parameters. The record of monitoring must contain: A. the calendar date; B. the following measurements recorded in a manner that allows the data to be immediately accessed upon inspection by the commissioner: (1) all six-minute opacity readings; (2) all one-hour average sulfur dioxide emission concentrations at the inlet and outlet of the acid gas control device if compliance is based on a percent reduction, or at the outlet only if compliance is based on the outlet emission limit; and (3) all one-hour average carbon monoxide emission concentrations, steam flow or alternative unit load measurement parameter as described in Minn. R. 7011.1265, subp. 4a, combustion chamber temperature, and particulate matter control device temperatures; and C. the following average concentrations and parameters: - all 24-hour daily geometric average percent reductions in sulfur dioxide emissions or all 24-hour daily geometric average sulfur dioxide emission concentrations, as applicable; - all four-hour block or 24-hour daily arithmetic average carbon monoxide emission concentrations, as applicable; and - all four-hour block arithmetic average unit load levels and particulate matter control device inlet temperatures. [Minn. R. 7011.1260, subp. 6]

SI Id	Sequence	Requirement
	131	Continuous monitoring records. The Permittee must keep records of: Records of monitoring data. The Permittee must document the following parameters measured using continuous monitoring systems: -All 6-minute average levels of opacity. -All 1-hour average concentrations of sulfur dioxide emissions. -All 1-hour average concentrations of carbon monoxide emissions. -All 1-hour average load levels of EQUI 35. -All 1-hour average flue gas temperatures at the inlet of the particulate matter control device. Records of average concentrations and percent reductions. The Permittee must document the following parameters: -All 24-hour daily block geometric average concentrations of sulfur dioxide emissions or average percent reductions of sulfur dioxide emissions. -All 4-hour block or 24-hour daily block arithmetic average concentrations of carbon monoxide emissions. -All 4-hour block arithmetic average load levels of EQUI 35. -All 4-hour block arithmetic average flue gas temperatures at the inlet of the particulate matter control device. Records of exceedances. The Permittee must document three items: -Calendar dates whenever any of the pollutant or parameter levels recorded or the opacity level recorded did not meet the emission limits or operating levels specified in this permit. -Reasons the applicable emission limits or operating levels were exceeded. -Corrective actions taken to meet the emission limits or operating levels. Records of minimum data. The Permittee must document three items: -Calendar dates for which the minimum amount of data required was not collected under 40 CFR 60.1260 and 60.1335. Record the dates for sulfur dioxide emissions, carbon monoxide emissions, load levels of EQUI 35, and temperatures of the flue gases at the inlet of the particulate matter control device. -Reasons the minimum data was not collected. -Corrective actions taken to obtain the required amount of data. Records of exclusions. The Permittee must document each time data was excluded from the calculation of averages and the reasons the data were excluded for sulfur dioxide emissions, carbon monoxide emissions, load levels of EQUI 35, and temperatures of the flue gases at the inlet of the particulate matter control device. Records of drift and accuracy. The Permittee must document the results of the daily drift tests and quarterly accuracy determinations according to Procedure 1 of appendix F of 40 CFR pt. 60. Keep the records for the sulfur dioxide and carbon monoxide continuous emissions monitoring systems. Records of the relationship between oxygen and carbon dioxide. If the Permittee chooses to monitor carbon dioxide instead of oxygen as a diluent gas, document the relationship between oxygen and carbon dioxide, as specified in 40 CFR 60.1255. Records of calendar dates. Include the calendar date on each record. [40 CFR 60.1365, Minn. R. 7011.1293]
	132	The Permittee must keep all records onsite in paper copy or electronic format unless the Administrator or commissioner approves another format. The Permittee must keep all records on each municipal waste combustion unit for at least 5 years. The Permittee must make all records available for submittal to the Administrator or commissioner, or for onsite review by an inspector. [40 CFR 60.1345, Minn. R. 7011.1293]

SI Id	Sequence	Requirement
	133	The Permittee shall maintain records and submit reports as required in Minn. R. 7011.1285. The Permittee is subject to the record-keeping and reporting requirements in Minn. R. 7007.0800, subps. 5 and 6 and shall maintain on site all submittals required by Minn. R. 7011.1285 as paper copies for five years. [Minn. R. 7011.1285, subp. 1]
	134	Daily Operating Record. The Permittee shall maintain a daily record of the operation of the waste combustor. The record shall contain: A. the calendar date; B. the hours of operation; C. the weight of waste combusted; D. the weight of waste requiring disposal at a solid waste land disposal facility, including separated noncombustibles, excess waste, and ash; E. the amount and description of industrial solid waste received each day, the generator's name, and the method of handling; F. the measurements and determination of emissions averages as required in Minn. R. 7011.1260, subp. 6; G. results of performance tests conducted on EQUI 35 as required in Minn. R. 7011.1270 and 40 CFR pt. 60, subp. AAAA; H. instances of dumpstack use, specifically addressing the length of time the dumpstack was used, the operating conditions of the waste combustor during dumpstack used, and the reason for using the dumpstack; I. the names of persons who have completed initial review or subsequent annual review of the operating manual; J. the reasons for exceeding any of the average emission rates, percent reductions, or operating parameters specified under Minn. R. 7011.1260, subp. 6, item C, or the opacity limit and a description of corrective actions taken; J1. Continuous monitoring system records including each one-hour emission average recorded by the CEMS, each six-minute opacity average recorded by the COMS, monitor certification test reports, excess emissions reports, cylinder gas audit reports, calibration error audit reports, relative accuracy test audits, linearity check reports, results of daily calibration drift checks, and records of adjustments made and maintenance performed on the CEMS or COMS; K. reasons for not obtaining the minimum number of hours of sulfur dioxide emissions or operational data (opacity, carbon monoxide emissions, steam flow or alternative unit load measurement parameter as described in Minn. R. 7011.1265, subp. 4a, particulate matter control device temperature) and a description of corrective actions taken. L. the date of the calibration of all signal conversion elements associated with steam flow monitoring as required in Minn. R. 7011.1265, subp. 4; M. for waste combustors using an additive to comply with mercury or PCDD/PCDF emission limits, reasons for not maintaining the additive system operating parameter as determined in Minn. R. 7011.1272, subp. 2, and descriptions of corrective actions taken; M1. a record of the average additive system operating parameter for each hour of operation. M2. if the required hourly average additive system operating parameter is not maintained, the reasons for not maintaining the additive system operating parameter as determined in Minn. R. 7011.1272, subp. 2 and the corrective actions taken. M3. a record of the average additive mass feed rate for each hour of operation. N. for waste combustors using an additive to comply with mercury or PCDD/PCDF emission limits, reasons for not maintaining the additive mass feed rates as determined in Minn. R. 7011.1272, subp. 1, and descriptions of corrective actions taken; O. a record of the pressure drop across the fabric filters; and P. a record of acid gas control. [Minn. R. 7007.0800, subp. 5, Minn. R. 7011.1285]
	137	Recordkeeping: maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative. [Minn. R. 7007.0800, subp. 4-5]

SI Id	Sequence	Requirement
	138	Recordkeeping and Recording of Mercury/PCDD/PCDF Control Additive Use. The Permittee must maintain records on site in a form suitable for immediate inspection of: - Average carbon feed rate in kilograms (or pounds) per hour during all stack tests for dioxins/furans and mercury emissions. Include supporting calculations in the records. - For the operating parameter chosen to monitor carbon feed rate, average operating level during all stack tests for dioxins/furans and mercury emissions. Include supporting data that document the relationship between the operating parameter and the carbon feed rate. - All 8-hour block average mercury/PCDD/PCDF control additive feed rates in kilograms (pounds) per hour calculated from the monitored operating parameter. - Total mercury/PCDD/PCDF control additive purchased and delivered to the plant for each calendar quarter. If the Permittee chooses to evaluate total control additive purchased and delivered on a municipal waste combustion unit basis, record the total control additive purchased and delivered for each individual municipal waste combustion unit at the plant. Include supporting documentation. - Required quarterly usage of mercury/PCDD/PCDF control additive for the municipal waste combustion plant, calculated using equation 4 or 5 of 40 CFR 60.1460(f) (listed below). If the Permittee chooses to evaluate required quarterly usage for control additive on a municipal waste combustion unit basis, record the required quarterly usage for each municipal waste combustion unit at the plant. Include supporting calculations. Equation 4, plant basis: C = SUMn(fi * hi) Where: C = required quarterly carbon usage for the plant in kilograms (or pounds). fi = required carbon feed rate for the municipal waste combustion unit in kilograms (or pounds) per hour. This is the average carbon feed rate during the most recent mercury or dioxins/furans stack tests (whichever has a higher feed rate). hi = number of hours the municipal waste combustion unit was in operation during the calendar quarter (hours). n = number of municipal waste combustion units, i, located at the plant. Equation 5, unit basis: C = f * h Where: C = required quarterly carbon usage for the unit in kilograms (or pounds). f = required carbon feed rate for the municipal waste combustion unit in kilograms (or pounds) per hour. This is the average carbon feed rate during the most recent mercury or dioxins/furans stack tests (whichever has a higher feed rate). h = number of hours the municipal waste combustion unit was in operation during the calendar quarter (hours). - Quarterly total additive (PAC) bag usage consisting of number of bags, weight of each bag, weekly verification of weight, and monthly zero of scales. [40 CFR 60.1370(a), Minn. R. 7007.0800, subp. 4-5, Minn. R. 7011.1293]

SI Id	Sequence	Requirement
	139	The Permittee shall maintain a record of the average additive mass feed rate for each hour of operation (in kilograms or pounds per hour) during all stack tests for dioxin/furans (PCDD/PCDF) and mercury emissions, as measured by the operating parameter required in Minn. R. 7011.1272, subp. 2. If the operating parameter is not a direct measurement of the mass feed rate of the additive, then the record shall contain the calculations supporting the correlation between the mass feed rate and the measured operating parameter. The record shall be maintained on site in a form suitable for immediate inspection. [Minn. R. 7011.1272, subp. 3(A)]
	140	Recordkeeping, Records of low mercury/PCDD/PCDF control additive feed rates. The Permittee must keep the following records: - The calendar dates and times when the average mercury/PCDD/PCDF control additive feed rate over an 8-hour block was less than the average mercury/PCDD/PCDF control additive feed rates determined during the most recent mercury or PCDD/PCDF stack test (whichever has a higher feed rate). - Reasons for the low mercury/PCDD/PCDF control additive feed rates. - Corrective actions taken to meet the 8-hour average mercury/PCDD/PCDF control additive feed rate requirement. The Permittee must record each time data was excluded from calculation of average mercury/PCDD/PCDF control additive feed rates and the reasons the data were excluded. [40 CFR 60.1370(b) and (d), Minn. R. 7011.1293]
	146	The Permittee must submit a quarterly report: Due quarterly within 30 days after the quarter ending December 30, March 30, June 30, and September 30 of each year. The quarterly report may be submitted as a bound, paper copy or in an alternative format such as computer disk or CD-ROM. The commissioner shall accept the submittal in the alternative format provided that the commissioner has given prior approval for the use of the alternative format in order that compatibility between the software and hardware configurations of the commissioner and the Permittee can be assured. The report shall contain the following items: A. calendar date; B. sulfur dioxide and carbon monoxide emissions, the maximum waste combustor unit load level, and particulate matter control device temperatures as recorded by Minn. R. 7011.1260, subp. 6(C), and the daily maximum opacity reading as recorded by Minn. R. 7011.1260, subp. 6(B)(1). The facility may choose to provide this information in tabular or graphic form. The graphs shall be prepared as follows: (1) the graph shall represent one operating parameter or pollutant; (2) the applicable limit of the parameter or pollutant shall be indicated on the graph; and (3) data shall be expressed in the same units as the applicable operating parameter or emissions limit; C. instances of dumpstack use; D. the identification of operating days when any of the average emission concentrations, percent reductions, operating parameters specified under Minn. R. 7011.1260, subp. 6(C) or Minn. R. 7011.1272, subp. 2, or the opacity level exceeded the applicable limits. The report shall include the emission levels recorded during the exceedance, reasons for such exceedances as well as a description of corrective actions taken; E. the percent of the operating time for the quarter that the opacity CEMS was operating and collecting valid data; F. the identification of operating days for which the minimum number of hours that emission concentrations, percent reductions, operating parameters specified under Minn. R. 7011.1260, subp. 6(C), or Minn. R. 7011.1272, subp. 2, or the opacity level have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken; G. the results of daily sulfur dioxide, nitrogen oxides, and carbon monoxide CEMS drift tests and accuracy assessments as required in Minn. R. 7011.1260, subp. 5; H. the information required in Minn. R. 7011.1285, subp. 2(C), (D), and (E), summarized to reflect quarterly totals; I. a compliance certification as required in Minn. R. 7007.0800, subp. 6(D); and

SI Id	Sequence	Requirement
		J. if an additive is used to comply with mercury or PCDD/PCDF emission limits, the total additive used during the calendar quarter, as specified in Minn. R. 7011.1272, subp. 3(B), with supporting calculations. [Minn. R. 7011.1285, subp. 3]
	147	The Permittee must submit annual reports, plus semiannual reports for any emission or parameter level that does not meet the limits in 40 CFR pt. 60, subp. AAAA. The Permittee must submit all reports on paper, postmarked on or before the submittal dates in 40 CFR 60.1395, 60.1405, and 60.1420. If the Administrator agrees, the Permittee may submit electronic reports. The Permittee must keep a copy of all reports required by 40 CFR 60.1400, 60.1410, and 60.1425 onsite for 5 years. [40 CFR 60.1385, Minn. R. 7011.1293]
	148	The Permittee must submit a semiannual report on any recorded emission or parameter level that does not meet the requirements specified in 40 CFR pt. 60, subp. AAAA. If required, the Permittee must submit a semiannual report for data collected during the first half of a calendar year, by August 1 of that year. For data collected during the second half of the calendar year, the Permittee must submit the semiannual report by February 1 of the following year. [40 CFR 60.1415, 40 CFR 60.1420, Minn. R. 7011.1293]
	153	The Permittee must submit an annual report: Due annually, by the 1st of February and include the following information: (a) The results of the annual stack test, using appropriate units, for dioxins/furans, cadmium, lead, mercury, opacity, particulate matter, hydrogen chloride, and fugitive ash. (b) A list of the highest average emission levels recorded, in the appropriate units for sulfur dioxide, carbon monoxide, load level of the municipal waste combustion unit, and temperature of the flue gases at the inlet of the particulate matter air pollution control device (4-hour block average). (c) The highest 6-minute opacity level measured. Base this value on all 6-minute average opacity levels recorded by the continuous opacity monitoring system (40 CFR 60.1365(a)(1)). (d) For municipal waste combustion units that use activated carbon or control additive for controlling dioxins/furans or mercury emissions, include four records: (1) The average carbon or control additive feed rates recorded during the most recent dioxins/furans and mercury stack tests. (2) The lowest 8-hour block average carbon or control additive feed rate recorded during the year. (3) The total carbon or control additive purchased and delivered to the municipal waste combustion plant for each calendar quarter. If the Permittee chooses to evaluate total carbon/control additive purchased and delivered on a municipal waste combustion unit basis, record the total carbon/control additive purchased and delivered for each individual municipal waste combustion unit at the plant. (4) The required quarterly carbon/control additive usage of the plant calculated using the appropriate equation in 40 CFR 60.1460(f). If quarterly carbon/control additive usage is evaluated on a municipal waste combustion unit basis, record the required quarterly usage for each municipal waste combustion unit at the plant. (e) The total number of days that the minimum number of hours of data were not obtained for sulfur dioxide, carbon monoxide, load level of the municipal waste combustion unit, temperature of the flue gases at the inlet of the particulate matter air pollution control device, and carbon/control additive feed rate. Include the reasons the data was not obtained and corrective actions taken to obtain the data in the future. (f) The number of hours data was excluded from the calculation of average levels (include the reasons for excluding it) for sulfur dioxide, carbon monoxide, load level of the municipal waste combustion unit, temperature of the flue gases at the inlet of the particulate matter air pollution control device, and carbon feed rate. (g) A notice of intent to begin a reduced stack testing schedule for dioxins/furans emissions during the following calendar year if eligible for alternative scheduling (40 CFR 60.1305(a) or (b)).

SI Id	Sequence	Requirement
		(h) A notice of intent to begin a reduced stack testing schedule for other pollutants during the following calendar year if eligible for alternative scheduling (40 CFR 60.1305(a)). (i) A summary of any emission or parameter level that did not meet the limits specified in this permit. (j) A summary of the data in 40 CFR 60.1410(a) through (d) from the year preceding the reporting year. (k) If carbon dioxide is chosen to be monitored instead of oxygen as a diluent gas, documentation of the relationship between oxygen and carbon dioxide, as specified in 40 CFR 60.1255. (l) Documentation of periods when all certified chief facility operators and certified shift supervisors are offsite for more than 12 hours. [40 CFR 60.1385, 40 CFR 60.1410, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1293]
	155	The Permittee must include the following in the semiannual out-of-compliance reports: (a) For concentration or percent reduction of sulfur dioxide emissions, concentration of carbon monoxide emissions, load level of the municipal waste combustion unit, temperature of the flue gases at the inlet of the particulate matter air pollution control device and/or average 6-minute opacity level (the data obtained from the continuous opacity monitoring system are not used to determine compliance with the limit on opacity emissions) that exceeded the limits specified in this permit, include the calendar date they exceeded the limits, the averaged and recorded data for that date, the reasons for exceeding the limits, and corrective actions. (b) If the results of the annual stack tests show emissions above the limits specified in this permit for dioxins/furans, cadmium, lead, mercury, particulate matter, opacity, hydrogen chloride, and fugitive ash, include a copy of the test report that documents the emission levels and corrective actions. (c) For municipal waste combustion units that apply activated carbon/control additive to control dioxins/furans or mercury emissions, include two items: (1) Documentation of all dates when the 8-hour block average carbon/control additive feed rate (calculated from the carbon injection system operating parameter) is less than the highest feed rate established during the most recent mercury and dioxins/furans stack test (as specified in 40 CFR 60.1370(a)(1)). Include four items: (i) Eight-hour average carbon/control additive feed rate. (ii) Reasons for these occurrences of low carbon/control additive feed rates. (iii) The corrective actions taken to meet the carbon/control additive feed rate requirement. (iv) The calendar date. (2) Documentation of each quarter when total carbon purchased and delivered to the municipal waste combustion plant is less than the total required quarterly usage of carbon. If total carbon purchased and delivered is evaluated on a municipal waste combustion unit basis, record the total carbon purchased and delivered for each individual municipal waste combustion unit at the plant. Include five items: (i) Amount of carbon purchased and delivered to the plant. (ii) Required quarterly usage of carbon. (iii) Reasons for not meeting the required quarterly usage of carbon. (iv) The corrective actions taken to meet the required quarterly usage of carbon. (v) The calendar date. [40 CFR 60.1425, Minn. R. 7011.1293]

SI Id	Sequence	Requirement
	156	Record keeping and recording of additive use. The Permittee shall maintain a record of the average additive mass feed rate for each hour of operation, as measured by the operating parameter required in Minn. R. 7011.1272, subp. 2. If the operating parameter is not a direct measurement of the mass feed rate of the additive, then the record shall contain the calculations supporting the correlation between the mass feed rate and the measured operating parameter. The record shall be maintained on site in a form suitable for immediate inspection. During each calendar quarter, the Permittee shall estimate the total additive used at the waste combustor in pounds or kilograms by two independent means: (1) the weight of additive delivered to the plant; and (2) estimate the average additive mass feed rate in pounds per hour, or kilograms per hour, for each hour of operation for each unit, based on the parameters measured in Minn. R. 7011.1272, subp. 2. Sum the results of the mass feed rates for all waste combustor units at the plant for the total number of hours of operation during the calendar quarter. [Minn. R. 7011.1272, subp. 3]
	157	The Permittee shall maintain paper copies of each quarterly report, annual report, initial compliance report, and performance test report as required under Minn. R. 7011.1285, subp. 3, 4, 5, and 6 respectively, on-site for five years. [Minn. R. 7011.1285, subp. 1]
EQUI 36	2	The 40 CFR pt. 60 subp. A general provisions and appendices apply to 40 CFR pt. 62, except as follows: 40 CFR 60.7(a)(1), 60.7(a)(3), and 60.8(a) and where special provisions set forth under the applicable subpart of 40 CFR pt. 62 shall apply instead of any conflicting provisions. [40 CFR 62.02(b)(2)]
	4	Applicability of Standards. The standards of Minn. R. 7011.1227, Minn. R. 7011.1240, subp. 2, and Minn. R. 7011.1272, subp. 2, apply at all times when waste is being continuously burned, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction does not exceed three hours. Fugitive emissions standards applicable to ash conveying systems do not apply during maintenance and repair of ash conveying systems. "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown are not considered malfunctions. The start-up period commences when the waste combustor begins the continuous burning of solid waste and does not include any warm-up period when the waste combustor is combusting fossil fuel or other solid fuel. Continuous burning is the continuous, semicontinuous, or batch feeding of solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of solid waste solely to provide thermal protection of the grate or hearth during the start-up period when municipal solid waste is not being fed to the grate is not considered to be continuous burning. [Minn. R. 7011.1215, subp. 4]
	5	The emission limits and operating requirements of 40 CFR pt. 62, subp. JJJ apply at all times except during periods of municipal waste combustion unit startup, shutdown, or malfunction. Each startup, shutdown, or malfunction must not last for longer than 3 hours. A maximum of 3 hours of test data can be dismissed from compliance calculations during periods of startup, shutdown, or malfunction. During startup, shutdown, or malfunction periods longer than 3 hours, emissions data cannot be discarded from compliance calculations and all provisions under 40 CFR 60.11(d) of 40 CFR pt. 60, subp. A apply. [40 CFR 62.15150, 40 CFR 62.15165, Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	6	The Permittee must not cause gases to be emitted from EQUI 36 in excess of the applicable standards of Minn. R. 7011.1227. Emissions, except opacity, must be calculated under standard conditions corrected to seven percent oxygen on a dry volume basis. The Permittee may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen. [Minn. R. 7011.1225, subp. 1(A)]
	7	The Permittee must limit Particulate Matter <= 70 milligrams per dscm, 3-run average (run duration specified in test method) measured at 7% oxygen. [40 CFR 62.15155(b)(5), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]
	8	The Permittee must limit Particulate Matter <= 0.020 grains per dry standard cubic foot. This limit is applied in accordance with the "Applicability of Standards" stated in this permit above. [Minn. R. 7011.1227]
	9	The Permittee must limit Muni Waste Combust Organics <= 500 nanograms per dscm, measured as total PCDD/PCDF. The Permittee must use 40 CFR pt. 60, Appendix A, Method 23, as amended, to determine compliance with the PCDD/PCDF emission limits. The minimum sample time is four hours per test run. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 23 test run for PCDD/PCDF. The average of the PCDD/PCDF test runs is used to determine compliance. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(B)]
	10	The Permittee must limit Muni Waste Combust Organics <= 125 nanograms per dscm measured as Dioxins/furans (total mass basis), 3-run average (minimum run duration is 4 hours) measured at 7% oxygen. [40 CFR 62.15155(a), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]
	11	The Permittee must limit Muni Waste Combust Organics <= 20.0 nanograms per dscm. This limit is applied in accordance with the "Applicability of Standards" stated in this permit. The Permittee must follow the requirements specified in Minn. R. 7011.1265 and 40 CFR 62.1300 regarding sampling methods, sampling time, sample volume, and other testing requirements. [Minn. R. 7007.0800, subp. 2(A)]
	12	The Permittee must limit Cadmium <= 0.10 milligrams per dscm 3-run average (run duration specified in test method) measured at 7% oxygen. [40 CFR 62.15155(b)(1), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]
	13	The Permittee must limit Lead <= 1.6 milligrams per dscm, 3-run average (run duration specified in test method) measured at 7% oxygen. [40 CFR 62.15155(b)(2), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]
	14	The Permittee must limit Mercury <= 100 micrograms per dscm (short term) or 85% removal. [Minn. R. 7011.1227]
	15	The Permittee must limit Mercury <= 60 micrograms per dscm (long term) or 85% removal. [Minn. R. 7011.1227]
	16	The Permittee must limit Mercury <= 0.080 milligrams per dscm or 85% reduction of potential mercury emissions, 3-run average (run duration specified in test method), measured at 7% oxygen. [40 CFR 62.15155(b)(3), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]
	17	The Permittee must limit Mercury <= 41.0 micrograms per dscm. This limit is applied in accordance with Minn. R. 7011.1227, 7011.1240, subps. 2 and 5 and 7011.1272, subp. 2. The Permittee must follow the requirements specified in 40 CFR 62.15245 regarding sampling methods and other testing requirements and Minn. R. 7011.1265, subpart 3(C) and Minn. R. 7011.1265, subpart 3(D). [Minn. R. 7007.0800, subp. 2(A)]
	18	The Permittee must limit Opacity <= 10 percent opacity 6-minute average, calculated using 36 or more data points equally spaced over a six-minute period. [40 CFR 62.15155(b)(4), 40 CFR 62.15160(a)(2), Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(F), Minn. R. 7011.1295]
	19	The Permittee must limit Carbon Monoxide <= 100 parts per million 4-hour block average, arithmetic mean, measured at 7% oxygen. Compliance is determined by continuous emission monitoring systems. [40 CFR 62.15155(d)(1), 40 CFR 62.15160(a)(3), 40 CFR 62.15180, Minn. R. 7011.1227, Minn. R. 7011.1295]
	20	The Permittee must limit Hydrogen Chloride <= 250 parts per million by volume or 50% reduction of potential hydrogen chloride emissions, 3-run average (minimum run duration is 1 hour), measured at 7% oxygen. [40 CFR 62.15155(c)(1), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]
	21	The Permittee must limit Nitrogen Oxides <= 500 parts per million by dry volume, measured at 7% oxygen. No monitoring, testing, recordkeeping, or reporting is required to demonstrate compliance. [40 CFR 62.15155(c)(2), 40 CFR 62.15160(a)(2), Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	22	The Permittee must limit Sulfur Dioxide <= 77 parts per million 24-hour block average geometric concentration by dry volume, measured at 7% oxygen or 50% reduction of potential sulfur dioxides emissions. Determine compliance by emission monitoring system. [40 CFR 62.15155(c)(3), 40 CFR 62.15160(a)(2), 40 CFR 62.15180, Minn. R. 7011.1295]
	23	The Permittee must limit fugitive combustion ash Visible Emissions <= 5 percent of the observation period (i.e. 9 minutes per three-hour period), from an ash conveying system, or buildings or enclosures of ash conveying systems, including conveyor transfer points, as determined by 40 CFR pt. 60, Appendix A, Method 22, as amended. This limit does not apply to visible emissions discharged inside buildings or enclosures of ash conveying systems. [40 CFR 62.15155(d)(2), 40 CFR 62.15160(a)(2), Minn. R. 7011.1225, subp. 1(B), Minn. R. 7011.1295]
	25	The Permittee must limit Steam Flow <= 25,681 pounds per hour 4-hour block average. This is 110% of the steam production during the most recent EQUI 36 test (May 2-4, 2023) that demonstrated compliance for PCDD/PCDF emissions. Steam production shall not exceed 25,681 pounds per hour until a new test is conducted to establish a new maximum steam production capacity or as allowed by Minn. R. 7011.1240, subp. 5. [40 CFR 62.15145(a), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1265, subp. 7, Minn. R. 7011.1295, Minn. R. 7017.2025, subp. 3]
	27	The Permittee must vent emissions from EQUI 36 to control equipment meeting the requirements of TREAs 1, 2, and 3 whenever EQUI 36 operates. [Minn. R. 7007.0800, subp. 16(J)]
	28	After the required date for full or provisional certification, the Permittee must not operate the municipal waste combustion unit unless one of four employees is on duty: (a) A fully certified chief facility operator. (b) A provisionally certified chief facility operator who is scheduled to take the full certification exam. (c) A fully certified shift supervisor. (d) A provisionally certified shift supervisor who is scheduled to take the full certification exam. If the certified chief facility operator and certified shift supervisor both are unavailable, a provisionally certified control room operator at the municipal waste combustion unit may fulfill the certified operator requirement. Depending on the length of time that a certified chief facility operator and certified shift supervisor is away, you must meet one of three criteria: (a) When the certified chief facility operator and certified shift supervisor are both offsite for 12 hours or less and no other certified operator is onsite, the provisionally certified control room operator may perform those duties without notice to, or approval by, the Administrator. (b) When the certified chief facility operator and certified shift supervisor are offsite for more than 12 hours, but for 2 weeks or less, and no other certified operator is onsite, the provisionally certified control room operator may perform those duties without notice to, or approval by, the Administrator. However, you must record the periods when the certified chief facility operator and certified shift supervisor are offsite and include this information in the annual report as specified under 40 CFR 62.15340(l). (c) When the certified chief facility operator and certified shift supervisor are offsite for more than 2 weeks and no other certified operator is onsite, the provisionally certified control room operator may perform those duties without notice to, or approval by, the Administrator. However, you must take two actions: (1) Notify the Administrator in writing. In the notice, state what caused the absence and what you are doing to ensure that a certified chief facility operator or certified shift supervisor is onsite. (2) Submit a status report and corrective action summary to the Administrator every 4 weeks following the initial notification. If the Administrator notifies you that your status report or corrective action summary is disapproved, the municipal waste combustion unit may continue operation for 90 days, but then must cease operation. If corrective actions are taken in the 90-day period such that the Administrator withdraws the disapproval, municipal waste combustion unit operation may continue. [40 CFR 62.15135, 40 CFR 62.15140, Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	29	A chief facility operator or shift supervisor who holds a certificate as described in Minn. R. 7011.1281, subp. 1 must be present at the waste combustor facility at all times when solid waste is being combusted, except if individuals are assuming the duties of chief facility operator or shift supervisor, the individuals must obtain full certification as described in Minn. R. 7011.1281 within six months of assuming such duties. [Minn. R. 7011.1240, subp. 1(A), Minn. R. 7011.1240, subp. 1a, Minn. R. 7011.1281]
	30	Start-up on waste prohibited. During start-up from a cold furnace, the Permittee must use auxiliary fuels to achieve combustion chamber operating temperature. The use of solid waste solely to provide thermal protection of the grate or hearth during the start-up period when solid waste is not being fed to the grate is not considered to be continuous burning. [Minn. R. 7011.1240, subp. 3]
	31	The Permittee must use natural gas to warm the combustion and pollution control devices and maintain good combustion conditions in the combustion chamber from the time the waste feed has been discontinued until the combustion chamber is clear of combustible material or active combustion ceases. [Minn. R. 7007.0800, subp. 2(A)]
	32	Fuel Type: natural gas, solid waste, RDF, and mixed municipal solid waste as defined in Minn. Stat. 115A.03, subp. 21, and other nonhazardous wastes approved through the facility's Industrial Solid Waste Management Plan. The Permittee is authorized to burn waste tires, yard waste, and household hazardous waste that are incidentally received co-mingled with municipal solid waste. The Permittee must not combust waste tires, yard waste, or household hazardous waste as a separate waste stream. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1220, subp. 2]
	38	The dumpstack of a waste combustor must not be used for conducting routine inspection or maintenance on the control equipment or the combustion system without prior approval of the commissioner. A dumpstack shall only be used at a waste combustor when plant or worker safety would be in jeopardy without its use. The Permittee must record in the daily operating record required in Minn. R. 7011.1285, subp. 2, the date of use of the dumpstack, the length of time the dumpstack was used, the operating conditions of the waste combustor during dumpstack use, and the reason for using the dumpstack. [Minn. R. 7011.1240, subp. 7]
	39	Three types of employees must complete the EPA operator training course: (1) Chief facility operators. (2) Shift supervisors. (3) Control room operators. These employees must complete the operator training course by the date before an employee assumes responsibilities that affect operation of the municipal waste combustion unit. [40 CFR 62.15105, Minn. R. 7011.1295]
	40	Each chief facility operator and shift supervisor must obtain and maintain a current provisional operator certification from the American Society of Mechanical Engineers QRO-1-1994. The Permittee may obtain a copy from the American Society of Mechanical Engineers, Service Center, 22 Law Drive, Post Office Box 2900, Fairfield, NJ 07007. The Permittee may inspect a copy at the Office of Air Quality Planning and Standards Air Docket, EPA, 109 T.W. Alexander Drive, Room C521C, RTP, NC 27709 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. Each chief facility operator and shift supervisor must obtain a provisional certification by six months after they transfer to the municipal waste combustion unit or six months after they are hired to work at the municipal waste combustion unit. [40 CFR 62.15130(a) and (b), Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	41	Operator Certification. A person shall be certified provided the person can demonstrate the completion of ASME provisional certification as described in Standard for the Qualification and Certification of Resource Recovery Facility Operators, American Society of Mechanical Engineers (ASME) QRO-1-1994, incorporated by reference in Minn. R. 7011.1205, for chief facility operators, shift supervisors, and control room operators of municipal waste combustors. [Minn. R. 7011.1280, subp. 1(A)]
	42	Control room operators shall be certified as described in Minn. R. 7011.1280. Individuals, if assuming the duties of control room operator for the first time, shall obtain certification as described in Minn. R. 7011.1280 within six months of assuming such duties. [Minn. R. 7011.1240, subp. 1a(A)(5)]
	43	Each chief facility operator and shift supervisor must take one of two actions: (1) Obtain a full certification from the American Society of Mechanical Engineers. (2) Schedule a full certification exam with the American Society of Mechanical Engineers (QRO-1-1994 (incorporated by reference in 40 CFR 60.17 of 40 CFR pt. 60, subp. A)). The chief facility operator and shift supervisor must obtain the full certification or be scheduled to take the certification exam by six months after they transfer to the municipal waste combustion unit or six months after they are hired to work at the municipal waste combustion unit. [40 CFR 62.15130(c) and (d), Minn. R. 7011.1295]
	44	Individuals, if assuming the duties of chief facility operator or shift supervisor shall have obtained full certification as described in Minn. R. 7011.1281 within six months of assuming such duties. A "fully certified operator" means: A. a person who has obtained "certified municipal waste combustor examiner" certification as described in Minn. R. 7011.1282; B. a person who has obtained both "provisional certification" and "operator certification" according to ASME QRO-1-1994, incorporated by reference in Minn. R. 7011.1205; or C. a person who is a "fully certified operator" as described in Minn. R. 7011.1284. [Minn. R. 7011.1240, subp. 1a(A)(4), Minn. R. 7011.1280, subp. 1(A), Minn. R. 7011.1281]
	45	The Permittee shall establish a program to review the plant-specific operating manual with people whose responsibilities affect the operation of the waste combustor. Initial review is required by the date before an employee assumes responsibilities that affect operation of the waste combustor unit. Waste combustor personnel shall review the operating manual relevant to a newly assigned position before assumption of new job-related activities affecting air emissions. The Permittee shall update and review the manual with staff annually. The Permittee must record the date of initial review, annual update, and annual review. [40 CFR 62.15115(b),(c),&(d), Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	46	The Permittee shall develop and update on a yearly basis a site specific operating manual that shall, at a minimum, address the following elements of waste combustor unit operation: A. a summary of the applicable state rules and federal regulations to the activities described in the facility's air emissions permit; B. a description of basic combustion principles and theory applicable to the facility's waste combustor units; C. procedures for receiving, handling, and feeding municipal solid waste; D. waste combustor unit start-up, shutdown, and malfunction procedures; E. procedures for maintaining proper combustion air levels and supply; F. procedures for operating the waste combustor within the standards established in Minn. R. 7011.1201 to 7011.1294; G. procedures for responding to periodic upset or off-specification conditions; H. procedures for minimizing particulate matter carryover; I. procedures for monitoring the degree of solid waste burnout; J. procedures for handling ash; K. procedures for monitoring waste combustor emissions; L. procedures for reporting and record keeping; M. timetables and procedures for routine inspection and maintenance of equipment affecting air emissions; N. procedures for activating communications and alarm systems; and O. procedures to implement the facility's industrial waste management plan. The operating manual shall be kept in a location easily accessed by waste combustor personnel who have responsibilities which affect the operation of the waste combustor, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers. The Permittee must update the manual following each performance test to include operational changes resulting from emission performance testing results and include the revision dates within the operating manual. [Minn. R. 7011.1275, subp. 3]
	47	For plant-specific training, the Permittee must do four things: (a) Develop a specific operating manual. (b) Establish a program to review the plant-specific operating manual with people whose responsibilities affect the operation of the municipal waste combustion units. Complete the initial review by the date before an employee assumes responsibilities that affect operation of the municipal waste combustion units. (c) Update this manual annually. (d) Review the manual with staff annually. The Permittee must include 11 items in the operating manual: (a) A summary of all applicable standards in 40 CFR pt. 62, subp. JJJ. (b) A description of the basic combustion principles that apply to municipal waste combustion units. (c) Procedures for receiving, handling, and feeding municipal solid waste. (d) Procedures to be followed during periods of startup, shutdown, and malfunction of the municipal waste combustion units. (e) Procedures for maintaining a proper level of combustion air supply. (f) Procedures for operating the municipal waste combustion units within the standards contained in 40 CFR pt. 62, subp. JJJ. (g) Procedures for responding to periodic upset or off-specification conditions. (h) Procedures for minimizing carryover of particulate matter. (i) Procedures for handling ash. (j) Procedures for monitoring emissions from the municipal waste combustion units. (k) Procedures for recordkeeping and reporting. The Permittee must keep the operating manual in an easily accessible location at the plant. It must be available for review or inspection by all employees who must review it and by the Administrator. [40 CFR 62.15115(a), 40 CFR 62.15120, 40 CFR 62.15125, Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	48	Personnel without waste combustor or boiler operation experience must initially review the operating manual and work under the direct supervision of a certified operator or a certified operator's designee before assumption of job-related activities affecting air emissions for a minimum of 40 hours. The Permittee must record the dates of training sessions and the number of hours trained in each session. [Minn. R. 7011.1275, subp. 1(C)(1)]
	49	Waste combustor facility personnel who have responsibilities which affect the operation of the waste combustor, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers, must complete a program of instruction and on-the-job training based on the operating manual described in Minn. R. 7011.1275, subp. 3. The program must train facility personnel to maintain compliance with Minn. R. 7011.1201 to 7011.1294. Individual training shall be specific to the position held and shall, at a minimum, address the items in Minn. R. 7011.1275, subp. 3. For waste combustor facility personnel, the training program shall require: -initial review of the operating manual prior to assumption of any job-related activities affecting air emissions; -review of the operating manual relevant to a newly assigned position before assumption of new job-related activities affecting air emissions; and -annual review of the operating manual. [Minn. R. 7011.1275, subp. 1(A),(B),&(D)]
	50	Criteria; fully certified operator. A. To be eligible as a fully certified operator, an individual must maintain a provisional certificate from ASME or a certificate described in Minn. R. 7011.1280, and pass an examination administered by the waste combustor's certified municipal waste combustor examiner. B. The examination shall test comprehensive understanding of the content and procedures described in the waste combustor's operating manual that is required to be prepared for the facility by Minn. R. 7011.1275, subp. 3. C. If changes are made in equipment and/or operating procedures which the initial certification did not address, certificate holders shall demonstrate to the facility's certified examiner detailed knowledge of these changes within six months after the change is made. If the demonstration of knowledge has not been made within six months, the certificate shall expire. [Minn. R. 7011.1284]
	51	All employees with responsibilities that affect how a municipal waste combustion unit operates must complete the plant-specific training course. Include at least six types of employees: (a) Chief facility operators. (b) Shift supervisors. (c) Control room operators. (d) Ash handlers. (e) Maintenance personnel. (f) Crane or load handlers. [40 CFR 62.15110, Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	52	Training Program: Waste combustor personnel who have responsibilities which affect the operation of the waste combustor, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers, must complete a program of instruction and on-the-job training based on the operating manual. The program must train facility personnel to maintain compliance with Minn. R. 7011.1201 to 7011.1294. Individual training shall be specific to the position held and shall, at a minimum, address the items in Minn. R. 7011.1275, subp. 3. The Permittee must: - Implement the training program for personnel; - Identify all personnel who must be trained; - Include a separate page for each personnel in the operating record; - Record the names of those who have been trained, the type of training received, the number of training hours, and the date training was completed. The Permittee must maintain as a part of the operating record required by Minn. R. 7011.1285, subp. 2, a record of the identity of all waste combustor personnel who have received training and the number of training hours. The records shall be provided to the commissioner on demand. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1274, subp. 4, Minn. R. 7011.1275, subp. 1-2]
	53	The Permittee must keep the following records: (a) Records of provisional certifications. Include three items: (1) For the municipal waste combustion plant, names of the chief facility operator, shift supervisors, and control room operators who are provisionally certified by the American Society of Mechanical Engineers. (2) Dates of the initial provisional certifications. (3) Documentation showing current provisional certifications. (b) Records of full certifications. Include three items: (1) For the municipal waste combustion plant, names of the chief facility operator, shift supervisors, and control room operators who are fully certified by the American Society of Mechanical Engineers or an equivalent State-approved certification program. (2) Dates of initial and renewal full certifications. (3) Documentation showing current full certifications. (c) Records showing completion of the operator training course. Include three items: (1) For the municipal waste combustion plant, names of the chief facility operator, shift supervisors, and control room operators who have completed the EPA or State municipal waste combustion operator training course. (2) Dates of completion of the operator training course. (3) Documentation showing completion of operator training course. (d) Records of reviews for plant-specific operating manuals. Include three items: (1) Names of persons who have reviewed the operating manual. (2) Date of the initial review. (3) Dates of subsequent annual reviews. (e) Records of when a certified operator is temporarily offsite. Include two main items: (1) If the certified chief facility operator and certified shift supervisor are offsite for more than 12 hours but for 2 weeks or less and no other certified operator is onsite, record the dates that the certified chief facility operator and certified shift supervisor were offsite. (2) When all certified chief facility operators and certified shift supervisors are offsite for more than 2 weeks and no other certified operator is onsite, keep records of four items: (i) A notice that all certified persons are offsite. (ii) The conditions that cause these people to be offsite. (iii) The corrective actions taken to ensure a certified chief facility operator or certified shift supervisor is onsite. (iv) Copies of the written reports submitted every 4 weeks that summarize the actions taken to ensure that a certified chief facility operator or certified shift supervisor will be onsite.

SI Id	Sequence	Requirement
		(f) Records of calendar dates. Include the calendar date on each record. [40 CFR 62.15295, Minn. R. 7011.1295]
	54	The Permittee shall maintain a record of personnel who complete either the Environmental Protection Agency municipal waste combustor operator training course, or an equivalent course. The record shall include documentation of training completion. [Minn. R. 7011.1280, subp. 11]
	55	Record of certified operators. The Permittee shall maintain at the waste combustor facility for five years a record of the names of all personnel that the examiner has certified. This record shall contain the examination dates, the nature or content of the examination, the full name of the individual certified, the date of certification, and the signature of the certified examiner for that facility with the following certification: "I certify under penalty of law that, based on my examination of these persons, these persons have demonstrated the knowledge and skills that qualify these persons to be fully certified operators at Perham Resource Recovery Facility in accordance with the procedures of Minnesota Rules, parts 7011.1280 to 7011.1284." The Permittee shall maintain at the waste combustor facility for five years a record of the names of all personnel who have obtained provisional and/or full certification by ASME. The Permittee shall allow the commissioner to review all records related to the certification of operators, including the facility's program for the examination and certification of operators, the record required in Minn. R. 7011.1284, subp. 3, the content of examinations, and the results of an individual's examination. [Minn. R. 7011.1284, subp. 3, Minn. R. 7011.1284, subp. 3a, Minn. R. 7011.1284, subp. 4]
	56	Operation during performance testing. The Permittee must report operating conditions to the commissioner, including operating parameters of the air pollution control equipment, pressure drop across the fabric filters, flue gas temperatures, air flow rates, mercury/PCDD/PCDF control additive feed rate and acid gas control, and pressure drop across the combustion system. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1265, subp. 6]
	57	For stack tests required under 40 CFR 62.15230, the Permittee must keep records of the maximum demonstrated load of the municipal waste combustion units and maximum temperature at the inlet of the particulate matter control devices during all stack tests for dioxins/furans emissions. [40 CFR 62.15300(c), Minn. R. 7011.1295]
	58	Exceeding emission limits. If accurate and valid data results of a performance test demonstrate an exceedance of a standard of performance under Minn. R. 7011.1225 or in the waste combustor's air emission facility permit after normal start-up, the Permittee must take the actions in items A to D: A. The Permittee must report the exceedance to the commissioner as soon as reasonably possible with consideration to plant and worker safety and comply with the applicable reporting provisions of Minn. R. 7007.0800, subp. 6. B. The Permittee must take appropriate steps to return the waste combustor to compliance including additional performance test(s) and must demonstrate compliance within 60 days of the initial report of the exceedance. C. If the commissioner determines that compliance has not been achieved within 60 days of the initial report of exceedance, the waste combustor must be shut down on the 61st day after reporting the exceedance. D. If shutdown was required under item C, the waste combustor may be restarted under the conditions specified by the commissioner. The Permittee must notify the commissioner in writing of the date on which the Permittee plans to start up and to begin compliance testing. Notification must be at least ten days in advance of the compliance test date. The Permittee may restart the waste combustor for the purposes of compliance testing, provided that notification has been provided to the Commissioner. The Permittee is allowed to operate the waste combustor until the completion of the test, after which the waste combustor must be shut down. The waste combustor may be restarted only after the Permittee receives notice from the commissioner compliance has been achieved with the emissions standards or restarts for the purpose and duration of additional testing after further repair or operational changes. [Minn. R. 7007.0800, subp. 2(B), Minn. R. 7011.1265, subp. 11, Minn. Stat. 116.85, subd. 3]

SI Id	Sequence	Requirement
	59	Continuous Monitoring: The Permittee must install, calibrate, maintain, and operate continuous emission monitoring systems for oxygen (or carbon dioxide), sulfur dioxide, and carbon monoxide at the outlet of the air pollution control device. The Permittee must install, evaluate, and operate each continuous emission monitoring system according to the "Monitoring Requirements" in 40 CFR 60.13, subp. A. The Permittee must monitor the oxygen (or carbon dioxide) concentration at each location where sulfur dioxide and carbon monoxide are monitored. The Permittee may choose to monitor carbon dioxide instead of oxygen as a diluent gas. If the Permittee chooses to monitor carbon dioxide, then an oxygen monitor is not required and the Permittee must follow the requirements in 40 CFR 62.15200. If the Permittee chooses to demonstrate compliance by monitoring the percent reduction of sulfur dioxide, the Permittee must also install a continuous emission monitoring system for sulfur dioxide and oxygen (or carbon dioxide) at the inlet of the air pollution control device. If the Permittee prefers to use an alternative sulfur dioxide monitoring method, such as parametric monitoring, or cannot monitor emissions at the inlet of the air pollution control device to determine percent reduction, the Permittee can apply to the Administrator for approval to use an alternative monitoring method under 40 CFR 60.13(i). [40 CFR 62.15175, Minn. R. 7011.1295]
	60	Continuous monitors. The Permittee must install, calibrate, maintain, and operate a continuous monitoring system when burning solid waste. Monitoring systems that continuously read and record the following outputs must be installed: (1) for carbon monoxide at the waste combustor outlet; (2) for steam flow or an alternative unit load measurement parameter as described in Minn. R. 7011.1265, subp. 4a, in waste combustors that recover heat with a boiler; (3) for flue gas opacity, at a location after which the flue gas has exited the air pollution control equipment; and (4) for oxygen or carbon dioxide at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides emissions are monitored, to report corrected concentrations of regulated pollutants. [Minn. R. 7011.1260, subp. 3]
	61	The Permittee must also install, calibrate, maintain, and operate continuous monitor systems that read, record, and obtain representative measures of the process parameters from the affected facility for the following three operating parameters: (a) Load level of each municipal waste combustion unit. (b) Temperature of flue gases at the inlet of the particulate matter air pollution control devices. (c) Carbon feed rate if activated carbon is used to control dioxins/furans or mercury emissions. [40 CFR 60.13(f), 40 CFR 62.15260, Minn. R. 7011.1295, Minn. R. 7017.1010, subp. 1(A)]
	62	The Permittee must install, calibrate, maintain, and operate temperature monitors that continuously read and record the temperatures of the flue gas at the inlet of each particulate matter control device. [Minn. R. 7011.1260, subp. 2]

SI Id	Sequence	Requirement
	63	Continuous Opacity Monitoring: The Permittee must install, calibrate, maintain, and operate a continuous opacity monitoring system for each waste combustor. The Permittee must install, evaluate, and operate each continuous opacity monitoring system according to 40 CFR 60.13. The Permittee must complete each continuous opacity monitoring system annual evaluation according to Performance Specification 1 in appendix B of 40 CFR part 60 no more than 13 months after the previous evaluation. The Permittee must use tests conducted according to EPA Reference Method 9, as specified in 40 CFR 62.15245, to determine compliance with the applicable opacity limit in 40 CFR pt. 62, subp. JJJ, Table 4. The data obtained from the continuous opacity monitoring system are not used to determine compliance with the opacity limit. [40 CFR 62.15215, Minn. R. 7011.1295]
	64	The Permittee must install, calibrate, maintain, and operate a device to continuously measure the temperature of the flue gas stream at the inlet of each particulate matter control device. [40 CFR 62.15270, Minn. R. 7011.1295]
	65	Combustion chamber temperature monitor: The Permittee must install and operate continuous temperature monitors in the combustion unit. [Minn. R. 7011.1260, subp. 1]
	66	Continuous Monitoring: The Permittee must: - Continuously monitor the selected mercury/PCDD/PCDF control additive (additive) feed rate operating parameter during all periods when the municipal waste combustion unit is operating and combusting waste. - Calculate the 8-hour block average additive feed rate in kilograms (or pounds) per hour. - When calculating the 8-hour block average, exclude hours when the unit is not operating and include hours when unit is operating but the additive feed system is not working correctly. [40 CFR 62.15275(c), Minn. R. 7011.1295]
	67	Continuous Monitoring: The Permittee must obtain one-hour arithmetic averages from four or more data points equally spaced over each 1-hour period for: - Load level of the municipal waste combustion unit. - Temperature of the flue gases at the inlet of the particulate matter control device. - Mercury/PCDD/PCDF control additive feed rate. Data recorded during periods of continuous system breakdown, repair, calibration checks, and zero and span adjustments shall not be included in the data averages computed, unless there are, at least, two data points per hour. The Permittee must obtain at least two data points per hour in order to calculate a valid 1-hour arithmetic average. The Permittee must obtain valid 1-hour averages for at least 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter. An operating day is any day the unit combusts any municipal solid waste. If the Permittee does not obtain the minimum data required, the Permittee is in violation of this data collection requirement and must notify the Administrator according to 40 CFR 62.15340(e). [40 CFR 60.13(e)(2), 40 CFR 60.13(h)(2), 40 CFR 62.15280, Minn. R. 7011.1295]
	68	The Permittee must operate continuous monitors to measure and record data for at least 75 percent of the hours per day for 90 percent of the days of the calendar quarter that each waste combustor is operating and combusting solid waste. [Minn. R. 7011.1260, subp. 5(B)]

SI Id	Sequence	Requirement
	69	Continuous Monitoring: All continuous monitoring systems and monitoring devices required under 40 CFR pt. 60, including CEMS and COMS shall be installed and operational prior to conducting performance tests under 40 CFR 60.8. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device. [40 CFR 60.13(b), Minn. R. 7017.1010, subp. 1(A)]
	70	Continuous Operation: Except for continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, all continuous monitoring systems (including CEMS and COMS) shall be in continuous operation during all periods of emission unit operation. This includes periods of emission unit start-up, shutdown, or malfunction. [40 CFR 60.13(e), Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1090, subp. 1]
	71	The Permittee must install, calibrate, maintain, and operate a steam flowmeter or a feed water flowmeter and meet five requirements: (1) Continuously measure and record the measurements of steam (or feed water) in kilograms per hour (or pounds per hour). (2) Calculate steam (or feed water) flow in 4-hour block averages. (3) Calculate the steam (or feed water) flow rate using the method in "American Society of Mechanical Engineers (ASME PTC 4.1-1964): Test Code for Steam Generating Units, Power Test Code 4.1-1964 (Reaffirmed 1991)," section 4. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from the American Society of Mechanical Engineers, Service Center, 22 Law Drive, Post Office Box 2900, Fairfield, NJ 07007. You may inspect a copy at the Office of Air Quality Planning and Standards Air Docket, EPA, 109 T.W. Alexander Drive, Room C521C, RTP, NC 27709 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. (4) Design, construct, install, calibrate, and use nozzles or orifices for flow rate measurements, using the recommendations in "American Society of Mechanical Engineers Interim Supplement 19.5 on Instruments and Apparatus: Application, Part II of Fluid Meters", 6th Edition (1971), chapter 4. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from the American Society of Mechanical Engineers, Service Center, 22 Law Drive, Post Office Box 2900, Fairfield, NJ 07007. You may inspect a copy at the Office of Air Quality Planning and Standards Air Docket, EPA, 109 T.W. Alexander Drive, Room C521C, RTP, NC 27709 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. (5) Before each dioxins/furans stack test, or at least once a year, calibrate all signal conversion elements associated with steam (or feed water) flow measurements according to the manufacturer instructions. [40 CFR 62.15265(a), Minn. R. 7011.1295]
	72	Steam flow measurement method. The method contained in ASME PTC 4.1, section 4, incorporated by reference in Minn. R. 7011.1205, must be used for calculating the steam flow required under Minn. R. 7011.1260, subp. 3, item A, subitem (2). The recommendations of Application: Part II of Fluid Meters, Interim Supplement 19.5 on Instruments and Apparatus, chapter 4, incorporated by reference in Minn. R. 7011.1205, must be followed for design, construction, installation, calibration, and use of nozzles and orifices, except that measurement devices such as flow nozzles and orifices are not required to be recalibrated after they are installed. All signal conversion elements associated with steam flow measurements must be calibrated according to the manufacturer's instructions before each PCDD/PCDF test, and at least once per year. This annual calibration must be recorded in the daily operating record as described in Minn. R. 7011.1285, subp. 2. [Minn. R. 7011.1265, subp. 4]

SI Id	Sequence	Requirement
	73	If a municipal waste combustion unit does not generate steam, or, if the municipal waste combustion units have shared steam systems and steam load cannot be estimated per unit, the Permittee must determine, to the satisfaction of the Administrator, one or more operating parameters that can be used to continuously estimate load level (for example, the feed rate of municipal solid waste). The Permittee must continuously monitor the selected parameters. [40 CFR 62.15265(b), Minn. R. 7011.1295]
	74	Alternative continuous measuring methods in place of steam flow may be installed and operated, provided that the method continuously measures the waste combustor unit load, is equivalent to results obtained when using the method in Minn. R. 7011.1265, subp. 4, and the use of the method is approved by the Commissioner and Administrator prior to installation. [Minn. R. 7011.1265, subp. 4a]
	75	If the Permittee does not obtain the minimum data required in 40 CFR 62.15205(a) through (c), the Permittee must still use all valid data from the continuous emission monitoring systems in calculating emission concentrations and percent reductions in accordance with 40 CFR 62.15210. Alternate methods for collecting data when continuous emission monitoring systems malfunction or when repairs, calibration checks, or zero and span checks keeps the Permittee from collecting the minimum amount of data: - Sulfur dioxide; use alternative Method 6C. - Carbon monoxide; use alternative Method 10 with alternative interference trap. [40 CFR 62.15205(e), 40 CFR 62.15225, Minn. R. 7011.1295]
	76	The Permittee must use all valid data from the continuous emission monitoring systems in calculating emission concentrations and percent reductions. When continuous emissions data for sulfur dioxide removal efficiency, sulfur dioxide emission rates, or carbon monoxide are not obtained because of monitor breakdowns, repairs, calibration checks, and zero and span adjustments, emission data calculations to determine compliance must be made using the following methods: (1) for sulfur dioxide removal efficiency or sulfur dioxide emission concentrations, 40 CFR pt. 60, Appendix A, Method 19, as amended, to provide valid emission data to meet the requirements of Minn. R.7011.1260, subp. 5(B). Other monitoring systems or other data collection methods may be used as approved by the commissioner; and (2) for carbon monoxide, 40 CFR pt. 60, Appendix A, Method 10, as amended, to provide valid emission data to meet the requirements of Minn. R. 7011.1260, subp. 5(B). Other monitoring systems or other data collection methods may be used as approved by the commissioner. [Minn. R. 7011.1260, subp. 5(C)-(D)]
	77	The Permittee must notify the Administrator according to 40 CFR 62.15340(e) if the minimum data required for continuously monitored emissions and parameters are not obtained. [40 CFR 62.15205(d), 40 CFR 62.15280(d), Minn. R. 7011.1295]
	78	Exceeding continuously monitored emission limits. If accurate and valid data results collected from continuous monitors for sulfur dioxide or carbon monoxide data exceed emission limits established in Minn. R. 7011.1225 or this permit after normal start-up, the Permittee must take the following actions: A. The exceedance must be reported to the commissioner as soon as reasonably possible, giving consideration to matters of plant or worker safety or access to communications. B. Appropriate repairs or modifications to return the waste combustor to compliance must be commenced within 72 hours of the exceedance. C. If the waste combustor cannot be returned to compliance within 72 hours of the exceedance occurring, the waste combustor must be shut down. If the modifications to return the waste combustor to compliance require amending the air emission facility permit, the waste combustor must shut down within 72 hours of the exceedance. D. When repairs or modifications have been completed, the Permittee must demonstrate to the commissioner that the waste combustor is in compliance. The waste combustor may be started up after the Permittee notifies the commissioner in writing of the date the Permittee plans to start up the waste combustor and the date that compliance testing is scheduled. Notification must be given at least ten days in advance of the compliance test date. [Minn. R. 7011.1260, subp. 7]

SI Id	Sequence	Requirement
	79	The Permittee must keep records of the following items for continuously monitored pollutants or parameters. (a) Records of monitoring data. Document the following parameters measured using continuous monitoring systems: - All 6-minute average levels of opacity. - All 1-hour average concentrations of sulfur dioxide emissions. - All 1-hour average concentrations of carbon monoxide emissions. - All 1-hour average load levels of the municipal waste combustion units. - All 1-hour average flue gas temperatures at the inlet of the particulate matter control device. (b) Records of average concentrations and percent reductions. Document the following parameters: - All 24-hour daily block geometric average concentrations of sulfur dioxide emissions or average percent reductions of sulfur dioxide emissions. - All 4-hour block or 24-hour daily block arithmetic average concentrations of carbon monoxide emissions. - All 4-hour block arithmetic average load levels of the municipal waste combustion units. - All 4-hour block arithmetic average flue gas temperatures at the inlet of the particulate matter control device. [40 CFR 62.15305(a)-(b), Minn. R. 7011.1295]
	80	Recording data from continuous monitoring. The Permittee must maintain a permanent record of continuously measured parameters. The record of monitoring must contain: A. the calendar date; B. the following measurements recorded in a manner that allows the data to be immediately accessed upon inspection by the commissioner: (1) all six-minute opacity readings; (2) all one-hour average sulfur dioxide emission concentrations at the inlet and outlet of the acid gas control device if compliance is based on a percent reduction, or at the outlet only if compliance is based on the outlet emission limit; and (3) all one-hour average carbon monoxide emission concentrations, steam flow or alternative unit load measurement parameter as described in Minn. R. 7011.1265, subp. 4a, combustion chamber temperature, and particulate matter control device temperatures; and C. the following average concentrations and parameters: - all 24-hour daily geometric average percent reductions in sulfur dioxide emissions or all 24-hour daily geometric average sulfur dioxide emission concentrations, as applicable; - all four-hour block or 24-hour daily arithmetic average carbon monoxide emission concentrations, as applicable; and - all four-hour block arithmetic average unit load levels and particulate matter control device inlet temperatures. [Minn. R. 7011.1260, subp. 6]

SI Id	Sequence	Requirement
	81	Continuous monitoring records. The Permittee must keep records of: Records of exceedances. Document three items: (1) Calendar dates whenever any of the five pollutants or parameter levels recorded in 40 CFR 62.15305(b) or the opacity level recorded in 40 CFR 62.15305(a)(1) did not meet the emission limits or operating levels specified in 40 CFR pt. 62, subp. JJJ. (2) Reasons the applicable emission limits or operating levels were exceeded. (3) Corrective actions taken or are taking, to meet the emission limits or operating levels. Records of minimum data. Document three items: (1) Calendar dates for which the minimum amount of data required under 40 CFR 62.15205 and 62.15280 was not collected. Record these dates for these types of pollutants and parameters: sulfur dioxide emissions, carbon monoxide emissions, load levels of the municipal waste combustion unit, and temperatures of the flue gases at the inlet of the particulate matter control device. (2) Reasons the minimum data was not collected (3) Corrective actions taken or are taking to obtain the required amount of data. Records of exclusions. Document each time data was excluded from the calculation of averages for any of the following pollutants or parameters and the reasons the data were excluded: sulfur dioxide emissions, carbon monoxide emissions, load levels of the municipal waste combustion unit, and temperatures of the flue gases at the inlet of the particulate matter control device. Records of drift and accuracy. Document the results of the daily drift tests and quarterly accuracy determinations according to Procedure 1 of appendix F of 40 CFR pt. 60. Keep these records for the sulfur dioxide and carbon monoxide continuous emissions monitoring systems. Records of the relationship between oxygen and carbon dioxide. If the Permittee chooses to monitor carbon dioxide instead of oxygen as a diluent gas, document the relationship between oxygen and carbon dioxide, as specified in 40 CFR 62.15200. Records of calendar dates. Include the calendar date on each record. [40 CFR 62.15305(c)-(h), Minn. R. 7011.1295]
	83	The Permittee must keep all records onsite in paper copy or electronic format unless the Administrator approves another format. The Permittee must keep all records on each municipal waste combustion unit for at least 5 years. The Permittee must make all records available for submittal to the Administrator, or for onsite review by an inspector. [40 CFR 62.15290, Minn. R. 7011.1295]
	84	The Permittee shall maintain records and submit reports as required in Minn. R. 7011.1285. The Permittee is subject to the record-keeping and reporting requirements in Minn. R. 7007.0800, subps. 5 and 6. The Permittee shall maintain on site all submittals required by Minn. R. 7011.1285 as paper copies for five years. [Minn. R. 7011.1285, subp. 1]
	85	The Permittee must document all 4-hour block arithmetic average flue gas temperatures at the inlet of the particulate matter control device. [40 CFR 62.15305(b)(5), Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	86	Daily Operating Record: The Permittee shall maintain a daily record of the operation of the waste combustor. The record shall contain: A. the calendar date; B. the hours of operation; B1. the time when waste begins feeding and the steam load at the time; B2. the time the waste feed to the combustion chamber ceases; C. the weight of solid waste combusted; D. the weight of solid waste requiring disposal at a solid waste land disposal facility, including separated noncombustibles, excess solid waste, and ash; E. the amount and description of industrial solid waste received each day, the generator's name, and the method of handling; F. the measurements and determination of emissions averages as required in Minn. R. 7011.1260, subpart 6; G. results of performance tests conducted on waste combustor units as required in Minn. R. 7011.1270; H. instances of dumpstack use, specifically addressing the length of time the dumpstack was used, the operating conditions of the waste combustor during dumpstack used, and the reason for using the dumpstack.; H1. the time when PM control equipment by-pass begins; H2. the time when PM control bypass ceases; I. the names of persons who have completed initial review or subsequent annual review of the operating manual; J. the reasons for exceeding any of the average emission rates, percent reductions, or operating parameters specified under Minn. R. 7011.1260, subp. 6, item C, or the opacity limit and a description of corrective actions taken; J1. Continuous monitoring system records including: each one-hour emission average recorded by the CEMS, each six-minute opacity average recorded by the COMS, monitor certification test reports, excess emissions reports, cylinder gas audit reports, calibration error audit reports, relative accuracy test audits, linearity check reports, results of daily calibration drift checks, and log of adjustments made to the CEMS or COMS and maintenance performed on the CEMS or COMS; K. reasons for not obtaining the minimum number of hours of sulfur dioxide or operational data (opacity, carbon monoxide emissions, steam flow or alternative unit load measurement parameter as described in Minn. R. 7011.1265, subp. 4a, particulate matter control device temperature) and a description of corrective actions taken. L. the date of the calibration of all signal conversion elements associated with steam flow monitoring as required in Minn. R. 7011.1265, subp. 4. M. for waste combustors using an additive to comply with mercury or PCDD/PCDF emission limits, reasons for not maintaining the additive system operating parameter as determined in Minn. R. 7011.1272, subp. 2, and descriptions of corrective actions taken; and N. for waste combustors using an additive to comply with mercury or PCDD/PCDF emission limits, reasons for not maintaining the additive mass feed rates as determined in Minn. R. 7011.1272, subp. 1, and descriptions of corrective actions taken. N1. for control of Hg or dioxins, a record of the average additive system operating parameter and mass feed rate for each hour of operation. N2. record of the pressure drop across the fabric filters. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1285]
	87	Records of exclusions. The Permittee must document each time data was excluded from the calculation of averages for any of the following and the reasons the data were excluded: - Sulfur dioxide emissions. - Carbon monoxide emissions. - Load levels of EQUI 36. - Temperatures of the flue gases at the inlet of the particulate matter control device. [40 CFR 62.15305(e), Minn. R. 7011.1295]
	88	Recordkeeping: The Permittee must maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including any malfunction of the air pollution control equipment, or any periods during which a continuous monitoring system or monitoring device is inoperative. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	Requirement
	92	Recordkeeping and Recording of Mercury/PCDD/PCDF Control Additive Use. The Permittee must maintain a record of: - The average additive mass feed rate for each hour of operation (in kilograms or pounds per hour) during all stack tests for dioxin/furans (PCDD/PCDF) or mercury emissions, as measured by the operating parameter required in Minn. R. 7011.1272, subp. 2. If the operating parameter is not a direct measurement of the mass feed rate of the additive, then the record shall contain the calculations supporting the correlation between the mass feed rate and the measured operating parameter. -For the operating parameter chosen to monitor carbon feed rate, average operating level during all stack tests for dioxins/furans and mercury emissions. Include supporting data that document the relationship between the operating parameter and the carbon feed rate. - All 8-hour block average mercury/PCDD/PCDF control additive feed rates in kilograms (pounds) per hour calculated from the monitored operating parameter. - Total mercury/PCDD/PCDF control additive purchased and delivered to the facility for each calendar quarter. If the Permittee chooses to evaluate total carbon purchased and delivered on a municipal waste combustion unit basis, record the total carbon purchased and delivered for each individual municipal waste combustion unit at the plant. Include supporting documentation. - Required quarterly usage of mercury/PCDD/PCDF control additive for the municipal waste combustion plant, calculated using equation 4 or 5 of 40 CFR 62.15390(f) (listed below). If the Permittee chooses to evaluate required quarterly usage for carbon on a municipal waste combustion unit basis, record the required quarterly usage for each municipal waste combustion unit at the plant. Include supporting calculations. Equation 4, plant basis: C = SUMn(fi * hi) Where: C = required quarterly carbon usage for the plant in kilograms (or pounds). fi = required carbon feed rate for the municipal waste combustion unit in kilograms (or pounds) per hour. This is the average carbon feed rate during the most recent mercury or dioxins/furans stack tests (whichever has a higher feed rate). hi = number of hours the municipal waste combustion unit was in operation during the calendar quarter (hours). n = number of municipal waste combustion units, i, located at the plant. Equation 5, unit basis: C = f * h Where: C = required quarterly carbon usage for the unit in kilograms (or pounds). f = required carbon feed rate for the municipal waste combustion unit in kilograms (or pounds) per hour. This is the average carbon feed rate during the most recent mercury or dioxins/furans stack tests (whichever has a higher feed rate). h = number of hours the municipal waste combustion unit was in operation during the calendar quarter (hours). - Quarterly total additive bag usage consisting of number of bags, weight of each bag, weekly verification of weight, and monthly zero of scales.

SI Id	Sequence	Requirement
		The Permittee shall maintain records on site in a form suitable for immediate inspection. [40 CFR 62.15310(a), 40 CFR 62.15390(f), Minn. R. 7011.1295]
	93	The Permittee shall maintain a record of the average additive mass feed rate for each hour of operation, as measured by the operating parameter required in Minn. R. 7011.1272, subp. 2. If the operating parameter is not a direct measurement of the mass feed rate of the additive, then the record shall contain the calculations supporting the correlation between the mass feed rate and the measured operating parameter. The record shall be maintained on site in a form suitable for immediate inspection. [Minn. R. 7011.1272, subp. 3(A)]
	94	Recordkeeping, Records of low mercury/PCDD/PCDF control additive feed rates. The Permittee must keep the following records: - The calendar dates and times when the average mercury/PCDD/PCDF control additive feed rate over an 8-hour block was less than the average mercury/PCDD/PCDF control additive feed rates determined during the most recent mercury or PCDD/PCDF performance stack. - Reasons for the low mercury/PCDD/PCDF control additive feed rates. - Corrective actions taken to meet the 8-hour average mercury/PCDD/PCDF control additive feed rate requirement. The Permittee must record each time data was excluded from calculation of average mercury/PCDD/PCDF control additive feed rates and the reasons the data were excluded. [40 CFR 62.15310(b) and (d), Minn. R. 7011.1295]
	106	The Permittee must submit annual reports, plus semiannual reports for any emission or parameter level that does not meet the limits of this permit. The Permittee must submit all reports on paper, postmarked on or before the submittal dates in 40 CFR 62.15325, 62.15335, and 62.15350. If the Administrator agrees, the Permittee may submit electronic reports. The Permittee must keep a copy of all reports required by 40 CFR 62.15330, 62.15340, and 62.15355 onsite for 5 years. [40 CFR 62.15315, Minn. R. 7011.1295]
	107	The Permittee must submit a semiannual report on any recorded emission or parameter level that does not meet the requirements specified. If required, the Permittee must submit a semiannual report for data collected during the first half of a calendar year, by August 1 of that year. For data collected during the second half of the calendar year, the Permittee must submit the semiannual report by February 1 of the following year. [40 CFR 62.15345, 40 CFR 62.15350, Minn. R. 7011.1295]

SI Id	Sequence	Requirement
	108	The Permittee must include the following items in the semiannual out-of-compliance reports: (a) For concentration or percent reduction of sulfur dioxide emissions, concentration of carbon monoxide emissions, load level of the municipal waste combustion unit, temperature of the flue gases at the inlet of the particulate matter air pollution control device and/or average 6-minute opacity level (the data obtained from the continuous opacity monitoring system are not used to determine compliance with the limit on opacity emissions) that exceeded the limits specified in this permit, include the calendar date they exceeded the limits, the averaged and recorded data for that date, the reasons for exceeding the limits, and corrective actions. (b) If the results of the annual stack tests show emissions above the limits specified in this permit for dioxins/furans, cadmium, lead, mercury, particulate matter, opacity, hydrogen chloride, and fugitive ash, include a copy of the test report that documents the emission levels and corrective actions. (c) For municipal waste combustion units that apply activated carbon to control dioxins/furans or mercury emissions, include two items: (1) Documentation of all dates when the 8-hour block average carbon feed rate (calculated from the carbon injection system operating parameter) is less than the highest carbon feed rate established during the most recent mercury and dioxins/furans stack test (as specified in 40 CFR 62.15310(a)(1)). Include four items: (i) Eight-hour average carbon feed rate. (ii) Reasons for these occurrences of low carbon feed rates. (iii) The corrective actions taken to meet the carbon feed rate requirement. (iv) The calendar date. (2) Documentation of each quarter when total carbon purchased and delivered to the municipal waste combustion plant is less than the total required quarterly usage of carbon. If total carbon purchased and delivered is evaluated on a municipal waste combustion unit basis, record the total carbon purchased and delivered for each individual municipal waste combustion unit at the plant. Include five items: (i) Amount of carbon purchased and delivered to the plant. (ii) Required quarterly usage of carbon. (iii) Reasons for not meeting the required quarterly usage of carbon. (iv) The corrective actions taken to meet the required quarterly usage of carbon. (v) The calendar date. [40 CFR 62.15355, Minn. R. 7011.1295]
	109	Record keeping and recording of additive use. The Permittee shall maintain a record of the average additive mass feed rate for each hour of operation, as measured by the operating parameter required in Minn. R. 7011.1272, subp. 2. If the operating parameter is not a direct measurement of the mass feed rate of the additive, then the record shall contain the calculations supporting the correlation between the mass feed rate and the measured operating parameter. The record shall be maintained on site in a form suitable for immediate inspection. During each calendar quarter, the Permittee shall estimate the total additive used at the waste combustor in pounds or kilograms by two independent means: (1) the weight of additive delivered to the plant; and (2) estimate the average additive mass feed rate in pounds per hour, or kilograms per hour, for each hour of operation for each unit, based on the parameters measured in Minn. R. 7011.1272, subp. 2. Sum the results of the mass feed rates for all waste combustor units at the plant for the total number of hours of operation during the calendar quarter. [Minn. R. 7011.1272, subp. 3]

SI Id	Sequence	Requirement
	110	Mercury or PCDD/PCDF removal equipment operation. The Permittee shall determine and record the average additive mass feed rate, in pounds-per-hour, during each subsequent performance test for mercury or PCDD/PCDF. The Permittee shall correlate this feed rate to an operating parameter of the additive injection system. The Permittee shall submit the calculations supporting the correlation with the results of each mercury or PCDD/PCDF performance test. [Minn. R. 7011.1272, subp. 1]
	111	Particulate Matter: The Permittee must conduct a performance test: Due annually to measure particulate matter (PM) emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. For state regulated pollutants, if three annual performance tests for a three-year period show compliance with PM emission limits, the Permittee may continue to conduct annual testing, or may choose to conduct performance tests every 2.5 years. At a minimum, a performance test must be conducted every 2.5 years, but no more than 30 months following the previous compliance test. If a performance test indicates noncompliance with applicable standards, the Permittee must resume annual testing for three years for PM emissions. If three annual performance tests for the three-year period show compliance with PM emission limits, the Permittee may again conduct performance testing every 2.5 years. To measure PM for state regulated pollutants, the Permittee must use Method 5, 40 CFR pt. 60, Appendix A-3, as amended, and Method 202, 40 CFR pt. 51, Appendix M, as amended The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	112	Particulate Matter: The Permittee must conduct a performance test: Due annually to measure particulate matter (PM) emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. To measure PM for federal regulated pollutants, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 5 or 29 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. The minimum sample volume must be 1.0 cubic meters. The probe and filter holder heating systems in the sample train must be set to provide a gas temperature no greater than 160 plus or minus 14 degrees Celsius. The minimum sampling time is 1 hour. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1295, Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	114	Muni Waste Combust Organics: The Permittee must conduct a performance test: Due annually to measure Muni Waste Combust Organics (dioxins/furans or PCDD/PCDF) emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. For state regulated pollutants, if 3 annual performance tests for a 3-year period show compliance with PCDD/PCDF emission limits, the Permittee may continue to conduct annual testing, or may choose to conduct performance tests every 2.5 years. At a minimum, a performance test must be conducted every 2.5 years, but no more than 30 months following the previous compliance test. If a performance test indicates noncompliance with applicable standards, the Permittee must resume annual testing for 3 years for PCDD/PCDF emissions. If 3 annual performance tests for the 3-year period show compliance with PCDD/PCDF emission limits, the Permittee may again conduct performance testing every 2.5 years. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. To measure PCDD/PCDF, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 23 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. The minimum sampling time must be 4 hours per test run while the municipal waste combustion unit is operating at full load. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a) and (b), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	116	Visible Emissions: The Permittee must conduct performance test: Due annually for visible emissions from fugitive ash. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. The Permittee may test less often if all stack tests for fugitive ash emissions over 3 consecutive years show compliance with the fugitive ash emissions limit. In this case, the Permittee is not required to conduct a stack test for fugitive ash emissions for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the fugitive ash emissions limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for fugitive ash. To measure fugitive ash, the Permittee must use Method 22 (visible emissions). The three 1-hour observation period must include periods when the Permittee transfers fugitive ash from the waste combustion unit to the area where fugitive ash is stored or loaded into containers or trucks. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]
	117	Cadmium: The Permittee must conduct performance test: Due annually to measure cadmium emissions. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. The Permittee may test less often if all stack tests for cadmium over 3 consecutive years show compliance with the cadmium limit. In this case, the Permittee is not required to conduct a stack test for cadmium for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the cadmium limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for cadmium. To measure cadmium, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 29 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Compliance testing must be performed while the municipal waste combustion unit is operating at full load. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	118	Lead: The Permittee must conduct a performance test: Due annually to measure lead emissions. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. The Permittee may test less often if all stack tests for lead over 3 consecutive years show compliance with the lead limit. In this case, the Permittee is not required to conduct a stack test for lead for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the lead limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for lead. To measure lead, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 29 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Compliance testing must be performed while the municipal waste combustion unit is operating at full load. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	120	Hydrogen Chloride: The Permittee must conduct a performance test: Due annually to measure hydrogen chloride (HCl) emissions. The Permittee must conduct each annual stack test no later than 13 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. The Permittee may test less often if all stack tests for HCl over 3 consecutive years show compliance with the HCl limit. In this case, the Permittee is not required to conduct a stack test for HCl for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the HCl limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for HCl. To measure HCl, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 26 or 26A to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Test runs must be at least 1 hour long while the municipal waste combustion unit is operating at full load. The Permittee must include the SO2 CEMS data recorded during the time of the performance test as an appendix to the test report. The Permittee must also include chlorine in the ultimate fuel analysis as part of the Waste Composition Study. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	121	Opacity: The Permittee must conduct a performance test: Due annually to measure opacity. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. For state regulated pollutants, if three annual performance tests for a three-year period show compliance with opacity limits, the Permittee may continue to conduct annual testing, or may choose to conduct performance tests every 2.5 years. At a minimum, a performance test must be conducted every 2.5 years, but no more than 30 months following the previous compliance test. If a performance test indicates noncompliance with applicable standards, the Permittee must resume annual testing for three years for opacity emissions. If three annual performance tests for the three-year period show compliance with opacity limits, the Permittee may again conduct performance testing every 2.5 years. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2, using EPA Reference Methods 9 to determine the sampling location, pollutant concentration, and compliance with opacity limits, using a 3 hour observation period (thirty 6-min averages). Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	123	Mercury: The Permittee must conduct a performance test: Due annually to measure mercury emissions. The Permittee must conduct each annual stack test no later than 12.5 months after the previous stack test. At the time of permit issuance, the previous stack test was conducted on May 2-4, 2023. The facility may implement testing for mercury not less than once every three years or according to federal applicable requirements, whichever is more stringent, under the following conditions: the facility has demonstrated that mercury emissions have been below 50 percent of the facility's permitted long-term limit for three consecutive years. If a facility is granted testing for mercury not less than once every three years or according to federal applicable requirements, whichever is more stringent, and a mercury performance test shows mercury emissions greater than 50 percent of the facility's permitted mercury limit, the facility shall conduct annual mercury stack testing until emissions are below 50 percent of the facility's permitted mercury limit. Once the facility demonstrates that mercury emissions are again below 50 percent of the facility's permitted limit, the facility may resume testing every three years, upon notifying the Commissioner in writing. For federal regulated pollutants, if all stack tests for a given pollutant over 3 consecutive years show compliance with the emission limit, the Permittee is not required to conduct a stack test for that pollutant for the next 2 years. However, the Permittee must conduct another stack test within 36 months of the anniversary date of the third consecutive stack test that shows compliance with the emission limit. Thereafter, the Permittee must perform stack tests every third year but no later than 36 months following the previous stack tests. If a stack test shows noncompliance with an emission limit, the Permittee must conduct annual stack tests for that pollutant until all stack tests over 3 consecutive years show compliance with the emission limit for that pollutant. To measure mercury, the Permittee must use Method 1 to determine the sampling location. The Permittee must use Method 29 to measure pollutant concentration and simultaneously measure oxygen (or carbon dioxide) using Method 3A or 3B. Compliance testing must be performed while the municipal waste combustion unit is operating at full load. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a follow up compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [40 CFR 62.15235, 40 CFR 62.15240(b), 40 CFR 62.15245(a), 40 CFR 62.15250(a), 40 CFR pt. 62, subp. JJJ, Table 8, Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1270, subp. 3(A)(2) and (B), Minn. R. 7011.1295, Minn. R. 7017.2020, subp. 1]
	124	The maximum demonstrated capacity of EQUI 36 must be determined during each subsequent performance test during which compliance with the PCDD/PCDF emission limit in Minn. R. 7011.1225 is achieved. [Minn. R. 7011.1265, subp. 7]
	125	The Permittee must submit a performance test report: Due 45 calendar days after Performance Test Date (60 calendar days for dioxin/furan performance test). The reports shall contain the results of performance tests conducted to determine compliance with waste combustor unit emission limits whenever performance testing is conducted. The report shall be submitted according to the conditions of Minn. R. 7017.2035. [Minn. R. 7011.1285, subp. 6, Minn. R. 7017.2035, subp. 1-2]
	126	Particulate matter control; device temperature. The Permittee must determine and record the maximum temperature and the four-hour arithmetic average gas stream temperature as measured at the inlet to each particulate matter control device during each subsequent performance test for PCDD/PCDFs demonstrating compliance with the PCDD/PCDF emission limits in this permit. [Minn. R. 7011.1265, subp. 8]

SI Id	Sequence	Requirement
	127	The Permittee must select a mercury/PCDD/PCDF control additive system operating parameter that can be used to calculate mercury/PCDD/PCDF control additive (additive) feed rate (for example, screw feeder speed). During each PCDD/PCDF (dioxins/furans) and mercury performance test, the Permittee must determine the average additive feed rate in kilograms (or pounds) per hour and determine the average operating parameter level that correlates to that additive feed rate. The Permittee must establish a relationship between the operating parameter and the additive feed rate in order to calculate the additive feed rate based on the operating parameter level. [40 CFR 62.15275(a), 40 CFR 62.15275(b), Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1295]
	200	The Permittee must submit a quarterly report: Due quarterly within 30 days after the quarter ending December 30, March 30, June 30, and September 30 of each year. The quarterly report may be submitted as a bound, paper copy or in an alternative format such as computer disk or CD-ROM. The commissioner shall accept the submittal in the alternative format provided that the commissioner has given prior approval for the use of the alternative format in order that compatibility between the software and hardware configurations of the commissioner and the Permittee can be assured. The report shall contain the following items: A. calendar date; B. sulfur dioxide and carbon monoxide emissions, the maximum waste combustor unit load level, and particulate matter control device temperatures as recorded by Minn. R. 7011.1260, subp. 6(C), and the daily maximum opacity reading as recorded by Minn. R. 7011.1260, subp. 6(B)(1). The facility may choose to provide this information in tabular or graphic form. The graphs shall be prepared as follows: (1) the graph shall represent one operating parameter or pollutant; (2) the applicable limit of the parameter or pollutant shall be indicated on the graph; and (3) data shall be expressed in the same units as the applicable operating parameter or emissions limit; C. instances of dumpstack use; D. the identification of operating days when any of the average emission concentrations, percent reductions, operating parameters specified under Minn. R. 7011.1260, subp. 6(C) or Minn. R. 7011.1272, subp. 2, or the opacity level exceeded the applicable limits. The report shall include the emission levels recorded during the exceedance, reasons for such exceedances as well as a description of corrective actions taken; E. the percent of the operating time for the quarter that the opacity CEMS was operating and collecting valid data; F. the identification of operating days for which the minimum number of hours that emission concentrations, percent reductions, operating parameters specified under Minn. R. 7011.1260, subp. 6(C), or Minn. R. 7011.1272, subp. 2, or the opacity level have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken; G. the results of daily sulfur dioxide, nitrogen oxides, and carbon monoxide CEMS drift tests and accuracy assessments as required in Minn. R. 7011.1260, subp. 5; H. the information required in Minn. R. 7011.1285, subp. 2(C), (D), and (E), summarized to reflect quarterly totals; I. a compliance certification as required in Minn. R. 7007.0800, subp. 6(D); and J. if an additive is used to comply with mercury or PCDD/PCDF emission limits, the total additive used during the calendar quarter, as specified in Minn. R. 7011.1272, subp. 3(B), with supporting calculations. [Minn. R. 7011.1285, subp. 3]

SI Id	Sequence	Requirement
	19650	The Permittee must submit an annual report: Due annually, by the 1st of February (a) The results of the annual stack test, using appropriate units, for dioxins/furans, cadmium, lead, mercury, opacity, particulate matter, hydrogen chloride, and fugitive ash. (b) A list of the highest average emission levels recorded, in the appropriate units for sulfur dioxide, carbon monoxide, load level of the municipal waste combustion unit, and temperature of the flue gases at the inlet of the particulate matter air pollution control device (4-hour block average). (c) The highest 6-minute opacity level measured. Base this value on all 6-minute average opacity levels recorded by the continuous opacity monitoring system (40 CFR 62.15305(a)(1)). (d) For municipal waste combustion units that use activated carbon for controlling dioxins/furans or mercury emissions, include four records: (1) The average carbon feed rates recorded during the most recent dioxins/furans and mercury stack tests. (2) The lowest 8-hour block average carbon feed rate recorded during the year. (3) The total carbon purchased and delivered to the municipal waste combustion plant for each calendar quarter. If the Permittee chooses to evaluate total carbon purchased and delivered on a municipal waste combustion unit basis, record the total carbon purchased and delivered for each individual municipal waste combustion unit at the plant. (4) The required quarterly carbon usage of the plant calculated using the appropriate equation in 40 CFR 62.15390(f). If quarterly carbon usage is evaluated on a municipal waste combustion unit basis, record the required quarterly usage for each municipal waste combustion unit at the plant. (e) The total number of days that the minimum number of hours of data were not obtained for sulfur dioxide, carbon monoxide, load level of the municipal waste combustion unit, temperature of the flue gases at the inlet of the particulate matter air pollution control device, and carbon feed rate. Include the reasons the data was not obtained and corrective actions taken to obtain the data in the future. (f) The number of hours data was excluded from the calculation of average levels (include the reasons for excluding it) for sulfur dioxide, carbon monoxide, load level of the municipal waste combustion unit, temperature of the flue gases at the inlet of the particulate matter air pollution control device, and carbon feed rate. (g) A notice of intent to begin a reduced stack testing schedule for dioxins/furans emissions during the following calendar year if eligible for alternative scheduling (40 CFR 62.15250(a) or (b)). (h) A notice of intent to begin a reduced stack testing schedule for other pollutants during the following calendar year if eligible for alternative scheduling (40 CFR 62.15250(a)). (i) A summary of any emission or parameter level that did not meet the limits specified in this permit. (j) A summary of the data in 40 CFR 62.15340(a) through (d) from the year preceding the reporting year. (k) If carbon dioxide is chosen to be monitored instead of oxygen as a diluent gas, documentation of the relationship between oxygen and carbon dioxide, as specified in 40 CFR 62.15200. (l) Documentation of periods when all certified chief facility operators and certified shift supervisors are offsite for more than 12 hours. [40 CFR 62.15335, 40 CFR 62.15340, Minn. R. 7011.1295]
EQUI 41	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]

SI Id	Sequence	Requirement
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 42	2200	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
	2220	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 44	2850	The Permittee must conduct quarterly COMS performance audits: Due once per QA operating quarter (calendar quarter in which the unit operates at least 168 hours) after COMS certification test. Quarterly performance audits will include: optical alignment, calibration error, and zero compensation according to Procedure 3 of 40 CFR Pt. 60, Appendix F, section 10.0(2). Sources that achieve quality assured data for four consecutive quarters may reduce their auditing frequency to semi-annual. If a performance audit is failed, the source must resume quarterly testing for that audit requirement until it again demonstrates successful performance over four consecutive quarters. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
	2860	The Permittee must perform annual zero alignment as described in Procedure 3, section 10.3 of 40 CFR Pt. 60, Appendix F. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
STRU 2	1	The Permittee must only use dumpstack STRU 2 when plant or worker safety would be in jeopardy without its use. [Minn. R. 7011.1240, subp. 7]
STRU 3	1	The Permittee must only use dumpstack STRU 3 when plant or worker safety would be in jeopardy without its use. [Minn. R. 7011.1240, subp. 7]
STRU 5	1	STRU 5: The Permittee must install and maintain a stack height >= 125.0 feet above ground level. [Minn. R. 7007.0800, subp. 2(A)]
TREA 1	1	Temperature <= 396 degrees Fahrenheit 4-hour block average as measured at the inlet to the PM control device (as determined during the May 2-4, 2023 PCDD/PCDF performance test). Notwithstanding the previous sentence, upon the Commissioner's written notification that the emission unit has demonstrated compliance under the conditions of a PCDD/PCDF performance test and prior to incorporation of the new PM control device inlet temperature into this permit, the PM control device inlet temperature shall not exceed a temperature greater than 30 degrees Fahrenheit (17 degree C) greater than the PM control device inlet temperature established during that compliant performance test. [40 CFR 62.15145(b), Minn. R. 7011.1240, subp. 2, Minn. R. 7011.1295, Minn. R. 7017.2025, subp. 3]
	100	Pressure Drop >= 0.5 and <= 10.0 inches of water, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the follow up compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee must record the pressure drop on a 4-hour block average when in operation. If the recorded 4-hour block average pressure drop is outside the required range, the emissions during that time must be considered uncontrolled until the pressure drop is once again within the required range. The period of time for which the pressure drop is considered out of range must be reported as a deviation. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A)]
	17615	The Permittee must vent emissions from EQUI 36 to TREA 1 whenever EQUI 36 operates, and operate and maintain TREA 1 at all times that any emissions are vented to TREA 1. The Permittee must document periods of non-operation of the control equipment TREA 1 whenever EQUI 36 is operating. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	Requirement
	18510	If the Permittee replaces TREA 1, the replacement control must meet or exceed the requirements of TREA 1. Prior to making such a change, the Permittee must apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee must submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
	18530	The Permittee must operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee must keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]
	18550	Pressure Drop: Recordkeeping. The Permittee must record the pressure drop at least once every hour while in operation, calculate a 4-hour rolling average of the pressure drop, and record whether or not the 4-hour rolling average pressure drop was within the range specified in this permit. If the recorded 4-hour rolling average pressure drop is outside the required range, the emissions during that time shall be considered uncontrolled until the pressure drop is once again within the required range. Recorded values outside the range specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [Minn. R. 7007.0800, subps. 4-5]
	18560	Corrective Actions: The Permittee must take corrective action as soon as possible if any of the following occur: - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions must return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee must keep a record of the type and date of any corrective action taken for each filter. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 5]
	18565	Monitoring Equipment: The Permittee must install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation. [Minn. R. 7007.0800, subp. 4]
	18570	The Permittee must calibrate or replace the pressure drop monitor at least once every 12 months and must maintain a written record of any action resulting from the calibration. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]
	19640	Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee must inspect the control equipment components. The Permittee must maintain a written record of these inspections. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]
TREA 2	1	The Permittee must maintain the lime feed rate as >= 126.67 pounds per hour, 8-hour block average (as determined during the May 2-4, 2023 hydrogen chloride (HCl) performance test). The Permittee must keep records of the 8-hour block average feed rate at all times EQUI 36 is in operation. The Permittee must use the same or similar reagent as used during the most recent compliant HCl performance test. The Permittee must calibrate the feed rate at least once per day of operation. Notwithstanding the previous sentence, upon the Commissioner's written notification that EQUI 36 has demonstrated compliance under the conditions of a HCl performance test, the Permittee must maintain the lime feed rate determined during the most recent compliant HCl performance test. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7017.2025, subp. 3a]
	3	The Permittee must conduct a daily visual inspection of the dry limestone injection to ensure that the control equipment is properly operating. [Minn. R. 7007.0800, subp. 4]

SI Id	Sequence	Requirement
	4	Daily Recordkeeping: On each day of operation, the Permittee must keep a record of the dry limestone injection equipment inspection. The record must include any corrective actions taken if the control equipment was not operating properly or needed repair. The Permittee must also keep a record of lime feed rate calibrations to verify that the feed rate is equal to or greater than the hourly lime feed rate during the most recent MPCA approved performance test. [Minn. R. 7007.0800, subp. 4-5]
	17610	The Permittee must vent emissions from EQUI 36 to TREA 2 whenever EQUI 36 operates, and operate and maintain TREA 2 at all times that any emissions are vented to TREA 2. The Permittee must document periods of non-operation of the control equipment TREA 2 whenever EQUI 36 is operating. [Minn. R. 7007.0800, subp. 2(A)]
	17615	If the Permittee replaces TREA 2, the replacement control must meet or exceed the requirements of TREA 2. Prior to making such a change, the Permittee must apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee must submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
	20000	Recordkeeping of Lime Feed Rate: The Permittee must record the lime feed rate at least once every hour while in operation, calculate the 8-hour block average, and record whether or not the 8-hour block average met the feed rate of lime limit specified under TREA 2. Recorded values outside any range specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [Minn. R. 7007.0800, subp. 4-5]
	27540	Corrective Actions: The Permittee must take corrective action as soon as possible if any of the following occur: - the recorded lime feed rate is below the required rate; - fabric filter cleaning cycle indicates evidence of dry limestone injection malfunction; or - the dry limestone injection or any of its components are found during the inspections to need repair. Corrective actions must return the lime feed rate to within the permitted range(s), and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the Operation and Maintenance (O & M) Plan for the dry limestone injection. The Permittee must keep a record of the type and date of any corrective action taken for the dry limestone injection. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 5]
	27550	Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee must inspect the control equipment components. The Permittee must maintain a written record of these inspections. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subps. 4-5]
	27560	Monitoring Equipment: The Permittee must install and maintain the necessary monitoring equipment for measuring and recording lime feed rate as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored dry limestone injection is in operation. [Minn. R. 7007.0800, subp. 4]
	27565	The Permittee must calibrate or replace the lime feed rate monitors at least once every 12 months and must maintain a written record of any action resulting from the calibration. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]
	27570	The Permittee must operate and maintain the dry limestone injection in accordance with the O & M Plan. The Permittee must keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]

SI Id	Sequence	Requirement
TREA 3	1	The Permittee must maintain Mercury additive >= 3.8 pounds per hour 8-hour block average (as determined during the May 2-4, 2023 PCDD/PCDF performance test). Notwithstanding the previous sentence, upon the Commissioner's written notification that the emissions unit has demonstrated compliance under the conditions of a PCDD/PCDF or mercury performance test and prior to incorporation of the mercury/ PCDD/PCDF control additive feed rate into this permit, the Permittee must maintain the greater of the following: the additive feed rate determined during the most recent compliant mercury performance test or the most recent compliant PCDD/PCDF performance test. [40 CFR 62.15145(c), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1272, subp. 2, Minn. R. 7011.1295, Minn. R. 7017.2025, subp. 3]
	2	The Permittee must evaluate total carbon usage (additive) for each calendar quarter. The total amount of carbon purchased and delivered to the municipal waste combustion plant must be at or above the required quarterly usage of carbon. The Permittee must evaluate required quarterly carbon usage on a municipal waste combustion unit basis for each individual municipal waste combustion unit at the plant. Calculate the required quarterly usage of carbon using the appropriate equation in 40 CFR 62.15390. [40 CFR 62.15145(d), Minn. R. 7011.1295]
	3	During each calendar quarter, the Permittee must estimate the total additive used at the waste combustor in pounds or kilograms by two independent means as described in the following: 1) the weight of additive delivered to the plant; and 2) estimate the average additive mass feed rate in pounds per hour, or kilograms per hour, for each hour of operation for each unit, based on the activated carbon feeder auger rotation rate. Sum the results of the mass feed rates for all waste combustor units at the plant for the total number of hours of operation during the calendar quarter. [Minn. R. 7011.1272, subp. 3(B)]
	4	Records of average carbon feed rate for mercury and dioxins/furans (PCDD/PCDF) control. The Permittee must record and maintain the following: 1) Average carbon feed rate (in kilograms or pounds per hour) during all stack tests for dioxins/furans and mercury emissions. Include supporting calculations in the records. 2) For the operating parameter chosen to monitor carbon feed rate, average operating level during all stack tests for dioxins/furans and mercury emissions. Include supporting data that document the relationship between the operating parameter and the carbon feed rate. 3) All 8-hour block average carbon feed rates in kilograms (pounds) per hour calculated from the monitored operating parameter. [40 CFR 62.15310(a)(1)-(3), Minn. R. 7011.1295]
	5	Records of low carbon feed rates. The Permittee must record and maintain the following: 1) The calendar dates when the average carbon feed rate over an 8-hour block was less than the average carbon feed rates determined during the most recent stack test for dioxins/furans or mercury emissions (whichever has a higher feed rate). 2) Reasons for the low carbon feed rates. 3) Corrective actions the Permittee took or are taking to meet the 8-hour average carbon feed rate requirement. 4) Document each time data is excluded from the calculation of average carbon feed rates and the reasons the data were excluded. [40 CFR 62.15310(b) and (d), Minn. R. 7011.1295]
	6	The Permittee shall vent emissions from EQUI 36 to TREA 3 whenever EQUI 36 operates, and operate and maintain TREA 3 at all times that any emissions are vented to TREA 3. The Permittee shall document periods of non-operation of the control equipment TREA 3 whenever EQUI 36 is operating. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	Requirement
	7	Daily Inspections: At least once per day while operating, the Permittee must visually inspect the carbon injection control equipment for proper operation (i.e., no plugging of carbon, etc.). The Permittee must maintain a record of the inspection and any corrective actions taken resulting from the inspection. [Minn. R. 7007.0800, subp. 4]
	9	The Permittee must maintain a record of the carbon injection rate at all times EQUI 36 is in operation. [Minn. R. 7007.0800, subp. 4-5]
	11	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - fabric filter cleaning cycle indicates evidence of carbon injection malfunction; - the recorded additive feed rate is outside the required operating range; or - the carbon injection or any of its components are found during the inspections to need repair. Corrective actions shall return the additive feed rate to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan. The Permittee shall keep a record of the type and date of any corrective action taken. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subps. 4-5]
	12	Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording additive feed rate as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the carbon injection is in operation. [Minn. R. 7007.0800, subp. 4, Minn. R. 7017.0200]
	14	The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]
	20	Quarterly Inspections: At least once per calendar quarter, the Permittee must inspect the control equipment system components. The Permittee must maintain a written record of the inspection and any corrective actions taken resulting from the inspection. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subps. 4-5]
	30	Annual Inspection: At least once per calendar year, the Permittee must conduct an internal inspection of the control device that includes all operating systems of the control device. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4-5]
TREA 4	1	Temperature <= 361 degrees Fahrenheit 4-hour block average as measured at the inlet to the PM control device (as determined during the May 14-16, 2024 PCDD/PCDF performance test). Notwithstanding the previous sentence, upon the Commissioner's written notification that the emission unit has demonstrated compliance under the conditions of a PCDD/PCDF performance test and prior to incorporation of the new PM control device inlet temperature into this permit, the PM control device inlet temperature shall not exceed a temperature greater than 30 degrees Fahrenheit (17 degree C) greater than the PM control device inlet temperature established during that compliant performance test. [40 CFR 60.1200(b), Minn. R. 7011.1240, subp. 2, Minn. R. 7011.1293, Minn. R. 7017.2025, subp. 3]
	10000	Pressure Drop >= 0.5 and <= 10.0 inches of water, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the follow up compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee must record the pressure drop on a 4-hour block average when in operation. If the recorded 4-hour block average pressure drop is outside the required range, the emissions during that time must be considered uncontrolled until the pressure drop is once again within the required range. The period of time for which the pressure drop is considered out of range must be reported as a deviation. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A)]
	17615	The Permittee must vent emissions from EQUI 35 to TREA 4 whenever EQUI 35 operates, and operate and maintain TREA 4 at all times that any emissions are vented to TREA 4. The Permittee must document periods of non-operation of the control equipment TREA 4 whenever EQUI 35 is operating. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	Requirement
	18510	If the Permittee replaces TREA 4, the replacement control must meet or exceed the requirements of TREA 4. Prior to making such a change, the Permittee must apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee must submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
	18530	The Permittee must operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee must keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]
	18550	Pressure Drop: Recordkeeping. The Permittee must record the pressure drop at least once every hour while in operation, calculate a 4-hour rolling average of the pressure drop, and record whether or not the 4-hour rolling average pressure drop was within the range specified in this permit. If the recorded 4-hour rolling average pressure drop is outside the required range, the emissions during that time shall be considered uncontrolled until the pressure drop is once again within the required range. Recorded values outside the range specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [Minn. R. 7007.0800, subps. 4-5]
	18560	Corrective Actions: The Permittee must take corrective action as soon as possible if any of the following occur: - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions must return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee must keep a record of the type and date of any corrective action taken for each filter. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 5]
	18565	Monitoring Equipment: The Permittee must install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation. [Minn. R. 7007.0800, subp. 4]
	18570	The Permittee must calibrate or replace the pressure drop monitor at least once every 12 months and must maintain a written record of any action resulting from the calibration. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]
	19640	Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee must inspect the control equipment components. The Permittee must maintain a written record of these inspections. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]
TREA 5	1	The Permittee must maintain the lime feed rate as >= 142.0 pounds per hour, 8-hour block average (as determined during the May 14-16, 2024 hydrogen chloride (HCl) performance test). The Permittee must keep records of the 8-hour block average feed rate at all times EQUI 35 is in operation. The Permittee must use the same or similar reagent as used during the most recent compliant HCl performance test. The Permittee must calibrate the feed rate at least once per day of operation. Notwithstanding the previous sentence, upon the Commissioner's written notification that EQUI 35 has demonstrated compliance under the conditions of a HCl performance test, the Permittee must maintain the lime feed rate determined during the most recent compliant HCl performance test. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7017.2025, subp. 3a]
	3	The Permittee must conduct a daily visual inspection of the dry limestone injection to ensure that control equipment is properly operating. [Minn. R. 7007.0800, subp. 4]

SI Id	Sequence	Requirement
	4	Daily Recordkeeping: On each day of operation, the Permittee must keep a record of the dry limestone injection equipment inspection. The record must include any corrective actions taken if the control equipment was not operating properly or needed repair. The Permittee must also keep a record of lime feed rate calibrations to verify that the feed rate is equal to or greater than the hourly feed rate during the most recent MPCA approved performance test. [Minn. R. 7007.0800, subp. 4-5]
	17610	The Permittee must vent emissions from EQUI 35 to TREA 5 whenever EQUI 35 operates, and operate and maintain TREA 5 at all times that any emissions are vented to TREA 5. The Permittee must document periods of non-operation of the control equipment TREA 5 whenever EQUI 35 is operating. [Minn. R. 7007.0800, subp. 2(A)]
	17615	If the Permittee replaces TREA 5, the replacement control must meet or exceed the requirements of TREA 5. Prior to making such a change, the Permittee must apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee must submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
	20000	Recordkeeping of Lime Feed Rate: The Permittee must record the lime feed rate at least once every hour while in operation, calculate the 8-hour block average, and record whether or not the 8-hour block average met the feed rate of lime limit specified under TREA 2. Recorded values outside any range specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [Minn. R. 7007.0800, subp. 4-5]
	27540	Corrective Actions: The Permittee must take corrective action as soon as possible if any of the following occur: - the recorded lime feed rate is below the required rate; - fabric filter cleaning cycle indicates evidence of dry limestone injection malfunction; or - the dry limestone injection or any of its components are found during the inspections to need repair. Corrective actions must return the lime feed rate to within the permitted range(s), and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the Operation and Maintenance (O & M) Plan for the dry limestone injection. The Permittee must keep a record of the type and date of any corrective action taken for the dry limestone injection. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 5]
	27550	Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee must inspect the control equipment components. The Permittee must maintain a written record of these inspections. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subps. 4-5]
	27560	Monitoring Equipment: The Permittee must install and maintain the necessary monitoring equipment for measuring and recording lime feed rate as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored dry limestone injection is in operation. [Minn. R. 7007.0800, subp. 4]
	27565	The Permittee must calibrate or replace the lime feed rate monitors at least once every 12 months and must maintain a written record of any action resulting from the calibration. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]
	27570	The Permittee must operate and maintain the dry limestone injection in accordance with the O & M Plan. The Permittee must keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]

SI Id	Sequence	Requirement
TREA 6	1	The Permittee must maintain Mercury additive >= 4.0 pounds per hour 8-hour block average (as determined during the May 14-16, 2024 mercury and dioxin performance tests). Notwithstanding the previous sentence, upon the Commissioner's written notification that the emissions unit has demonstrated compliance under the conditions of a PCDD/PCDF or mercury performance test and prior to incorporation of the mercury/ PCDD/PCDF control additive feed rate into this permit, the Permittee must maintain the greater of the following: the additive feed rate determined during the most recent compliant mercury performance test or the most recent compliant PCDD/PCDF performance test. [40 CFR 60.1200(c), Minn. R. 7011.1240, subp. 5, Minn. R. 7011.1272, subp. 2, Minn. R. 7011.1293, Minn. R. 7017.2025, subp. 3]
	2	The Permittee must evaluate total carbon usage (additive) for each calendar quarter. The total amount of carbon purchased and delivered to the municipal waste combustion plant must be at or above the required quarterly usage of carbon. The Permittee must evaluate required quarterly carbon usage on a municipal waste combustion unit basis for each individual municipal waste combustion unit at the plant. Calculate the required quarterly usage of carbon using the appropriate equation in 40 CFR 60.1460(f). [40 CFR 60.1200(d), Minn. R. 7011.1293]
	3	During each calendar quarter, the Permittee must estimate the total additive used at the waste combustor in pounds or kilograms by two independent means as described in the following: 1) the weight of additive delivered to the plant; and 2) estimate the average additive mass feed rate in pounds per hour, or kilograms per hour, for each hour of operation for each unit, based on the activated carbon feeder auger rotation rate. Sum the results of the mass feed rates for all waste combustor units at the plant for the total number of hours of operation during the calendar quarter. [Minn. R. 7011.1272, subp. 3(B)]
	4	Records of average carbon feed rate for mercury and dioxins/furans (PCDD/PCDF) control. The Permittee must record and maintain the following: (1) Average carbon feed rate in kilograms (or pounds) per hour during all stack tests for dioxins/furans and mercury emissions. Include supporting calculations in the records. (2) For the operating parameter chosen to monitor carbon feed rate, average operating level during all stack tests for dioxins/furans and mercury emissions. Include supporting data that document the relationship between the operating parameter and the carbon feed rate. (3) All 8-hour block average carbon feed rates in kilograms (or pounds) per hour calculated from the monitored operating parameter. (4) Total carbon (additive) purchased and delivered for each individual municipal waste combustion unit. Include supporting documentation. (5) Required quarterly usage for each municipal waste combustion unit. Include supporting calculations. [40 CFR 60.1370(a), Minn. R. 7011.1293]
	5	Records of low carbon feed rates. The Permittee must record and maintain the following: (1) The calendar dates when the average carbon feed rate over an 8-hour block was less than the average carbon feed rates determined during the most recent stack test for dioxins/furans or mercury emissions (whichever has a higher feed rate). (2) Reasons for the low carbon feed rates. (3) Corrective actions taken to meet the 8-hour average carbon feed rate requirement. 4) Document each time data is excluded from the calculation of average carbon feed rates and the reasons the data were excluded. [40 CFR 60.1370(b) and (d), Minn. R. 7011.1293]

SI Id	Sequence	Requirement
	6	The Permittee shall vent emissions from EQUI 35 to TREA 6 whenever EQUI 35 operates, and operate and maintain TREA 6 at all times that any emissions are vented to TREA 6. The Permittee shall document periods of non-operation of the control equipment TREA 6 whenever EQUI 35 is operating. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2]
	7	Daily Inspections: At least once per day while operating, The Permittee must visually inspect the carbon injection control equipment for proper operation (i.e., no plugging of carbon, etc.). The Permittee must maintain a record of the inspection and any corrective actions taken resulting from the inspection. [Minn. R. 7007.0800, subp. 4-5]
	9	The Permittee must maintain a record of the carbon injection rate at all times EQUI 35 is in operation. [Minn. R. 7007.0800, subp. 4(B)]
	11	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - fabric filter cleaning cycle indicates evidence of carbon injection malfunction; - the recorded additive feed rate is outside the required operating range; or - the carbon injection or any of its components are found during the inspections to need repair. Corrective actions shall return the additive feed rate to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan. The Permittee shall keep a record of the type and date of any corrective action taken. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subps. 4-5]
	12	Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording additive feed rate as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the carbon injection is in operation. [Minn. R. 7007.0800, subp. 4]
	14	The Permittee shall operate and maintain the control equipment in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]
	20	Quarterly Inspections: At least once per calendar quarter, the Permittee must inspect the control equipment system components. The Permittee must maintain a written record of the inspection and any corrective actions taken resulting from the inspection. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subps. 4-5]
	25	Annual Inspection: At least once per calendar year, the Permittee must conduct an internal inspection of the control device that includes all operating systems of the control device. The Permittee shall maintain a written record of the inspection and any action resulting from the inspection. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4-5]